Vol. 917 Number 3

OFFICIAL GAZETTE

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UNITED STATES PATENT OFFICE

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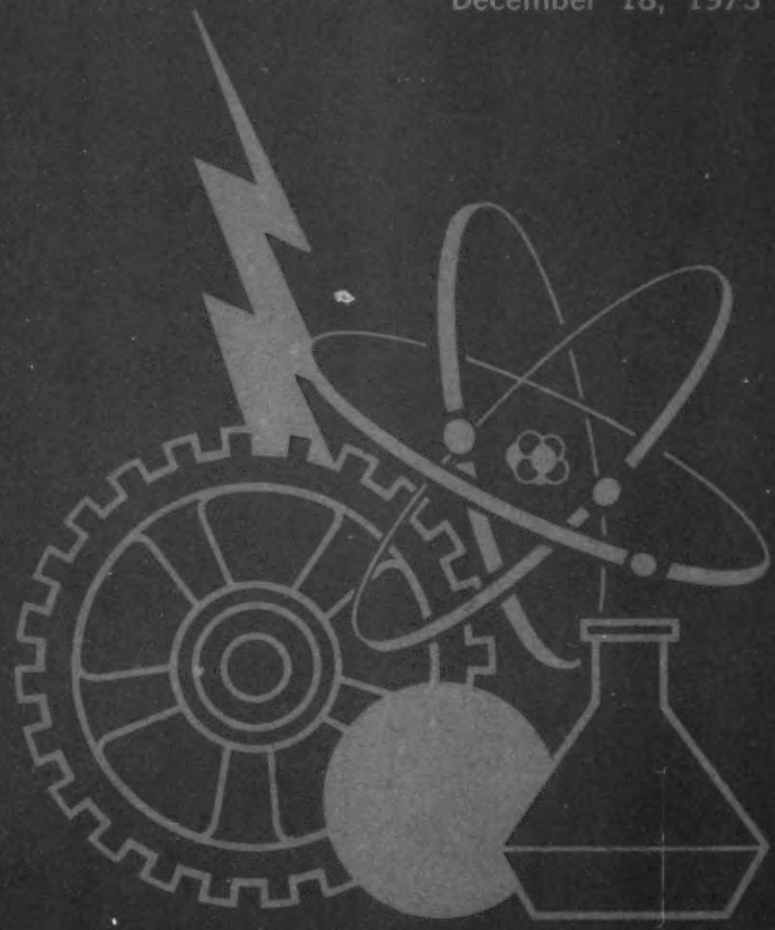
PATENTS

December 18, 1973



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 18, 1973 Volume 917 Number 3

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PATENT OFFICE NOTICES

Classification of U.S. Patents

The National Technical Information Service of the U.S. Department of Commerce has announced the availability of a new publication in microfilm format entitled "Classification of U.S. Patents" (Patent Office publication PAT 001.1–7306–M). This publication consists of a listing of all U.S. patents and related items in ascending numeric sequence together with the official U.S. classification of each patent, including both the original and all cross-reference classifications. It is offered for sale in the form of a 16mm negative reel microfilm in plain reels or reels packed in any of three types of cartridges.

The current edition lists all patents issued through June 30, 1973 and all reclassifications through December 1972 and includes "Additional Improvement" (AI), design patents (D), reissue design patents (RD), plant patents (PP), reissue patents (RE), patents issued prior to 1836 (X), reissue X patents (RX), defensive publications (T) and patents. It can be purchased in (1) individual reels ($6.00) or cartridges (three types, all $8.00), (2) a complete set of 18 reels ($74.00) or cartridges ($110) or (3) a partial set of the last 7 reels (12–18) in reels ($30.00) or cartridges ($44.00). See the detailed price table which follows:

CLASSIFICATION OF U.S. PATENTS

(PAT 001.1–7306–M)
June 1973 Edition

Reel No(s).	NTIS accession No.	Beginning patent number	Ending patent number	Price*
Complete set of 18.	COM–73–11470.	----------	----------	{P=$74.00 M, R, T=$110.00
Partial set of last 7.	COM–73–11471.	2,244,100	3,742,516	{P=$30.00 M, R, T=$44.00
Individual reels.	----------	----------	----------	{P=$6.00 M, R, T=$8.00
1	COM–73–11472	AI2–AI318 DI–D227,517 PP1–PP119	PP119	
2	COM–73–11473	PP120–PP3,369 RD301–RD25,414 RE2–RE27,089 RX35–RX1,217M T628,881–T910,010 X1–X9741M I–192,199	192,199	
3	COM–73–11474	192,200	420,199	
4	COM–73–11475	420,200	648,199	
5	COM–73–11476	648,200	876,199	
6	COM–73–11477	876,200	1,104,199	
7	COM–73–11478	1,104,200	1,332,199	
8	COM–73–11479	1,332,200	1,560,199	
9	COM–73–11480	1,560,200	1,788,199	
10	COM–73–11481	1,788,200	2,016,099	
11	COM–73–11482	2,016,100	2,244,099	
12	COM–73–11483	2,244,100	2,472,099	
13	COM–73–11484	2,472,100	2,700,099	
14	COM–73–11485	2,700,100	2,927,999	
15	COM–73–11486	2,928,000	3,155,199	
16	COM–73–11487	3,155,200	3,375,699	
17	COM–73–11488	3,375,700	3,597,399	
18	COM–73–11489	3,597,400	3,742,516	

*Prices quoted depend on how film is supplied. The code letters represent the types of service available, as follows:
P=Plain reels in cardboard boxes.
M=Reels in 3M cartridges.
R=Reels in Recordak cartridges.
T=Reels in "Thread Easy" Magazines.

NOTE.—When ordering, the appropriate code letter should be appended to the NTIS accession number, e.g., COM–73–11470–M.

Since this microfilm publication will be updated periodically, customers will always be supplied the latest edition available at the time of the order. To order, customers should write to the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151, citing the NTIS accession number and description of each item ordered. Payment may be by check or money order or charged to the customer's NTIS deposit account or American Express.

WILLIAM I. MERKIN,
Nov. 21, 1973. *Assistant Commissioner for Administration.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,794,417, Ransburg and Starkey, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; 2,893,893, W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING; 2,893,894, E. M. Ransburg, METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING, filed Mar. 1, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–473, *Ransburg Corp. v. Bruce Industries, Inc.*

2,854,091, M. E. Webster, PRESSURE REGULATOR VALVE, filed May 14, 1973, D.C., S.D.N.Y., Doc. 73–2126, *Bernzomatic Corp. v. Olin Corporation.*

2,873,639, C. O. Musser, TOY PIANO HAVING KEY MOUNTED TONE BARS, filed May 4, 1973, D.C., S.D.N.Y., Doc. 73–2006, *George Lerner and Julius Ellman v. Child Guidance Products Inc.*

2,893,893. (See 2,794,417.)

2,893,894. (See 2,794,417.)

2,919,200, Dubin and White, BACTERIOSTATIC PLASTIC, filed Apr. 6, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73–C–203 (4), *Maurice T. Dubin and James S. White v. American Air Filter Co. Inc. and Walgreen Drug Stores.* Same, filed Apr. 11, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73–C–214 (1), *Maurice T. Dubin and James S. White v. Owens-Corning Fiberglas Corp. and Schnarr's True Value Hardware.* Same, filed Apr. 13, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73–C–221 (3), *Maurice T. Dubin and James S. White v. United States Gypsum Co. and Central Hardware.*

3,025,774, H. G. Bush, ACCESS AND PROTECTIVE COVER FOR VALVES, METERS, MANHOLES AND THE LIKE, filed Apr. 12, 1973, D.C., S.D. Calif. (San Diego), Doc. 73–142–S, *Brooks Products, Inc. v. Peterson Concrete, Inc. and South Bay Foundry Incorporated.*

3,029,291, A. J. Dietzler, METHOD FOR MAKING ALKYLIDENEBIS (DIBROMOPHENOLS), filed Oct. 16, 1972, D.C. Del. (Wilmington), Doc. 4486, *The Dow Chemical Corporation v. Great Lakes Chemical Corporation.* Apr. 30, 1973, consolidated with and continues as Civil Action 4614; Apr. 30, 1973, Civil Action 4486 was consolidated with and continues as Civil Action 4618.

3,048,485, C. G. Bieber, HIGH STRENGTH CREEP RESISTING ALLOY, filed in the Ct. of Cl. (District of Columbia), Doc. 330–68, *The International Nickel Company, Inc. v. The United States and Cameron Iron Works, Inc.* Ordered: on stipulation of parties, judgment in favor of plaintiff; claims 5 and 6 are valid and infringed. Jan. 12, 1973.

3,175,256, R. C. Horton, WEATHER STRIP, filed May 8, 1973, D.C.S.C. (Rock Hill), Doc. 73–544, *USM Corporation v. The Schlegel Manufacturing Company.*

3,388,236, J. J. McLeod, PADDED CLAVICLE SPLINT, filed May 9, 1973, D.C., S.D. Fla. (Miami), Doc. 73–797–C–JLK, *John J. McLeod, Jr. v. All Orthopedic Appliances, Inc.*

3,343,978, T. J. Engelbach, ADHESIVE TRANSFERS, filed July 11, 1968, D.C., N.D. Ohio (Toledo), Doc. C68–526, *Avery Products Corporation v. Morgan Adhesives Company.* Action dismissed on the merits, May 15, 1973.

3,346,447, W. T. Wright, COMPOSITIONS AND METHODS FOR PROTECTING PLANTS WITH METAL DERIVATIVES OF HEXACHLOROPHENE; **3,420,936,** same, COMBATING BACTERIAL AND FUNGAL PLANT DISEASES WITH HEXACHLOROPHENE, 2, 2-METHYLENE BIS-(3,4,6-TRICHLOROPHENOL), **filed** May 9, 1973, D.C., M.D. Fla. (Tampa), Doc. 73-9-C, Ft. M.K., *Nationwide Chemical Corporation* v. *Wilburn T. Wright and Webb Corp.*

3,420,936. (See 3,346,447.)

3,483,617, J. Krampe, TOOL FOR CUTTING AND STRIPPING CABLE, **filed** Jan. 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c47, *Josef Krampe* v. *Ideal Industries, Inc.* Defendant's motion for summary judgment granted and cause dismissed, Sept. 6, 1972.

3,504,907, Barber and Scrymegeour. FILING SYSTEM INDEX INDICATORS AND METHOD OF PRODUCING SAME, **filed** May 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1232, *Donald Barber and Thomas Scrymegeour and Datafile Limited* v. *Tab. Prod. Co. and Tab Service Co.*

3,631,847, J. C. Hobbs II, METHOD AND APPARATUS FOR INJECTING FLUID INTO THE VASCULAR SYSTEM, **filed** Sept. 6, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2207, *James C. Hobbs II and Barber Colman Co.* v. *Medrad, Inc.* By agreement suit dismissed with prejudice Mar. 16, 1973, order vacating order dismissal with prejudice and substituting order of dismissal without prejudice, Mar. 23, 1973.

3,640,304, Fox and Parry, INSERTABLE VALVE ASSEMBLY, **filed** May 10, 1973, D.C. Oreg. (Portland), Doc. C-73-372, *Marco Dental Products, Incorporated* v. *Mark W. Whitman and Kathleen F. Whitman, doing business as Beaver State Dental.*

3,668,324, J. Firestone, TELEPHONE ADAPTER, **filed** May 4, 1973, D.C., S.D.N.Y., Doc. 73-C-1998, *Saxton Products, Inc.* v. *United States Telephone Company.*

3,689,499, Semplonius and Kolk, CHAIR, **filed** May 10, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1207, *Steelcase, Inc.* v. *All-Steel Equipment Inc.*

3,728,180, Messerschmidt, Heyman and Johnsen, POWDERLESS ETCHING BATH COMPOSITIONS; **3,730,899,** same, POWDERLESS ETCHING BATH ADDITIVE, **filed** May 10, 1973, D.C.N.J. (Newark), Doc. 657-73-C, *Philip A. Hunt Chemical Corporation* v. *Mona Industries, Inc.*

3,730,899. (See 3,728,180.)

D. 226,510, Benty and Friedman, COMBINED HAIR DRYER AND STYLING ATTACHMENT THEREFOR, **filed** May 15, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1089-RJK, *Clairol Incorporated* v. *Pacific American Industries, Inc.*

Erratum

In the OFFICIAL GAZETTE of Feb. 27, 1973, vol. 907, page 856, under "Patent Suits," paragraph 7 reading "3,107,703" should be *3,103,073.*

Certificates of Correction for the Week of Dec. 18, 1973

P.P. 3,349	3,725,006	3,746,674	3,754,287
Re. 27,686	3,725,322	3,746,705	3,754,425
Re. 27,745	3,726,204	3,746,882	3,754,544
3,366,496	3,726,680	3,746,896	3,754,648
3,380,964	3,727,097	3,746,964	3,754,700
3,466,184	3,727,159	3,747,067	3,754,814
3,509,088	3,727,281	3,747,225	3,754,907
3,599,357	3,727,304	3,747,398	3,754,934
3,601,576	3,727,474	3,747,615	3,754,979
3,615,525	3,727,537	3,747,805	3,754,981
3,617,546	3,727,606	3,748,128	3,755,002
3,623,484	3,727,687	3,748,145	3,755,011
3,625,848	3,727,704	3,748,304	3,755,115
3,625,859	3,727,714	3,748,486	3,755,260
3,629,273	3,728,063	3,748,498	3,755,361
3,630,993	3,728,149	3,748,581	3,755,389
3,635,734	3,728,213	3,748,955	3,755,400
3,642,197	3,728,269	3,749,088	3,755,479
3,644,978	3,729,655	3,749,162	3,755,530
3,647,136	3,730,951	3,749,277	3,755,700
3,659,002	3,731,442	3,749,386	3,755,712
3,663,544	3,733,534	3,749,438	3,755,835
3,679,791	3,733,663	3,749,444	3,755,919
3,681,459	3,733,752	3,749,519	3,755,998
3,684,458	3,734,579	3,749,529	3,756,005
3,684,911	3,735,395	3,749,980	3,756,016
3,686,149	3,735,881	3,749,981	3,756,103
3,689,857	3,735,944	3,750,461	3,756,169
3,692,792	3,736,685	3,750,820	3,756,192
3,694,432	3,736,933	3,750,836	3,756,314
3,694,441	3,736,953	3,750,842	3,756,315
3,697,398	3,737,332	3,751,148	3,756,472
3,697,659	3,737,758	3,751,168	3,756,575
3,699,134	3,737,825	3,751,325	3,756,607
3,699,151	3,738,925	3,751,362	3,756,609
3,700,755	3,738,962	3,751,393	3,756,617
3,703,555	3,739,125	3,751,518	3,756,753
3,704,164	3,739,240	3,751,523	3,756,883
3,708,895	3,739,503	3,751,524	3,756,919
3,709,904	3,739,721	3,751,804	3,756,939
3,709,907	3,739,799	3,751,861	3,757,022
3,711,503	3,739,834	3,751,897	3,757,068
3,714,124	3,740,258	3,751,910	3,757,251
3,715,394	3,740,444	3,752,227	3,757,316
3,715,727	3,740,522	3,752,274	3,757,463
3,715,834	3,740,704	3,752,490	3,757,486
3,718,410	3,740,733	3,752,527	3,757,521
3,718,772	3,741,182	3,752,592	3,757,830
3,719,028	3,741,723	3,752,717	3,758,113
3,719,269	3,741,898	3,752,786	3,758,208
3,719,426	3,741,917	3,752,846	3,758,265
3,719,495	3,741,966	3,752,878	3,758,372
3,720,242	3,742,438	3,752,883	3,758,414
3,720,363	3,742,783	3,752,887	3,758,513
3,721,058	3,743,525	3,752,923	3,758,514
3,721,640	3,743,655	3,753,120	3,758,624
3,721,657	3,743,665	3,753,585	3,758,705
3,721,915	3,745,027	3,753,649	3,759,744
3,722,780	3,746,185	3,753,835	3,759,809
3,723,254	3,746,267	3,754,042	3,759,835
3,723,395	3,746,422	3,754,082	3,759,878
3,723,449	3,746,434	3,754,183	3,760,098
3,723,459	3,746,503	3,754,214	3,760,117
3,724,916	3,746,556	3,754,219	

National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE ARMY

Chief; Patents Division; Office of Judge Advocate General; Patent Division Room 2C-455; Pentagon; Washington, D.C. 20310

Patent 3,692,566. Method of Depositing Isotropic Boron Nitride. Filed Nov. 24, 1970. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,694,321. Portable Distillation Unit. Filed Nov. 3, 1970. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,694,677. VHF-UHF Piezoelectric Resonators. Filed Mar. 3, 1971. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,695,766. Photosensitive Surface Shaping for Optical Heterodyning. Filed Jan. 14, 1970. Patented Oct. 3, 1972. Not available NTIS.

Patent 3,696,474. Lacing Lock for Hood. Filed Dec. 17, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,696,561. Biological Door Seal. Filed Apr. 1, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,645. Purification of Antibodies. Filed Apr. 28, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,698,240. Electronic Circuit for Prevention of Receiver Paralysis in Ultrasonic Echo Ranging. Filed Sept. 29, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,319. High Temperature-Resistant Waterproof Caseless Primer. Filed June 8, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,331. Apparatus and Method for the Disposal of Liquid Waste Material. Filed July 19, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,698,651. Tape Wrapping Arrangement. Filed Mar. 1, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,360. One-Shot Monostable Multivibrator. Filed Aug. 15, 1969. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,509. Seismic System for Real-Time Reporting. Filed Oct. 21, 1969. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,699,584. Insertion Phase Correction of Phase Shifters by Presetting Binary Counters. Filed Dec. 30, 1970. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,700,010. Wire Tying Apparatus Including Demountable Typing Mechanism. Filed June 17, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,338. Light Scattering Cell. Filed June 9, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,397. Camouflaged Article and Method of Producing same. Filed May 6, 1969. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,517. Method for Arresting Propagating Fractures in Stressed Skin Monocoque Type of Construction. Filed Nov. 24, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,547. Bonding Process for Polyphenylene Oxide-dielectric Microwave Circuits and Bonded Assembly. Filed Oct. 20, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,999. Automatic Battery Polarizing Circuit. Filed Jan. 11, 1972. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,004. Circuit for Generating a Repeatable Voltage as a Function of Temperature. Filed May 13, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,026. Median Frequency Generator. Filed May 18, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,048. Multi-Rod Single Pump Source Laser. Filed Sept. 15, 1967. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,701,498. Fiberoptic Clearance Light System. Filed June 3, 1971. Patented Oct. 31, 1972. Not available NTIS.

Patent 3,705,474. Method to Prevent Toxic Gas Emission. Filed Jan. 21, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,705,523. Hybrid Routing Technique for Switching Communication Network. Filed Sept. 21, 1970. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,705,549. Ammunition. Filed Nov. 25, 1970. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,705,814. Directly Edible, Compacted and Dehydrated Fruit Bar. Filed Aug. 20, 1970. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,705,998. Negative Ion Generator. Filed Jan. 27, 1972. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,706,001. Thermionic Electron Emitter Containing Thorium Carbide, Thorium Oxide and Zirconium Carbide. Filed Mar. 12, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,706,050. Magnetohydrodynamic Gas Dynamic Laser. Filed Nov. 2, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,706,227. Pneumatic Thermometer. Filed Mar. 27, 1963. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,228. Temperature and Velocity Apparatus for Moving Fluids. Filed Jan. 5, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,279. Combustible Cartridge Case. Filed Jan. 20, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,706,280. Novel Combustible Cartridge Case and Process Therefor. Filed Dec. 29, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,487. Photochromic Projection System. Filed May 4, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,496. Cinetheodolite. Filed Jan. 13, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,498. Automatic Beam Scanning Apparatus for Evaluating Optical Beacons. Filed Apr. 23, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,609. TNT Composition Containing a Cellulosic Resin Which is Free From Oily Exudation Upon Storage. Filed Dec. 29, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,865. Elapsed Time Indicator. Filed Dec. 7, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,867. Electronic Anti-Intrusion Device. Filed Feb. 18, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,706,938. Directional Ion Anemometer. Filed Mar. 10, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,711,769. Spurious Signals and Intermodulation Products Detection Enhancement Circuit. Filed Mar. 9, 1971. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,721,899. Continuity Test and Indicating Circuit. Filed Oct. 6, 1971. Patented Mar. 20, 1973. Not available NTIS.

Patent 3,722,553. Wire Tying Apparatus Including Timing and Stopping Mechanism. Filed June 17, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,513. Organic Disulfide Sulfinic Acid Compounds. Filed Nov. 6, 1969. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,725,729. Electrical Crowbar System with Novel Triggered Spark Gap Devices. Filed Oct. 29, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,728,647. Waveguide Phase Shift Actuator. Filed Nov. 4, 1971. Patented Apr. 17, 1973. Not available NTIS.

Patent 3,733,319. Nitrothiophenes. Filed Jan. 7, 1970. Patented May 15, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents; Washington, D.C. 20545

Patent application 148,132. Improved Process for Treatment of Aqueous Suspensions. Filed May 29, 1971. PC $3/MF $1.45.

Patent application 295,780. Compact Dynamic Multistation Photometer Utilizing Disposable Cuvette Rotor. Filed Oct. 6, 1972. PC $3/MF $1.45.

Patent application 687,594. Noble Metals Having a High Emittance Coating of Iron Titanate. Filed Dec. 4, 1967. PC $3/MF $1.45.

Patent 3,480,793. Logarithmic Function Generator. Filed Aug. 2, 1966. Patented Nov. 25, 1969. Not available NTIS.

Patent 3,725,293. Conversion of Fuel-Metal Nitrate Solutions to Oxides. Filed Jan. 11, 1972. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,295. Technetium Labeling. Filed July 20, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,728,217. Bumpy Torus Plasma Confinement Device. Filed June 5, 1972. Patented Apr. 17, 1973. Not available NTIS.

Patent 3,733,248. Plasma Control by Feedback. Filed Feb. 15, 1972. Patented May 15, 1973. Not available NTIS.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters; NASA—Code GP–2. Washington, D.C.

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[FR Doc.73-24760; Filed 11-20-73;8:45 am]

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent-application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

DEPARTMENT OF THE ARMY
Chief; Patents Division; Pentagon; Office of the Judge Advocate General; Patent Division; Rm 2C–455. Washington, D.C. 20310

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U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents Washington, D.C. 20545

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DEPARTMENT OF THE AIR FORCE
AF/JACP; Washington, D.C. 20314

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Patent 3,677,011. Thrust Control System for Hybrid Rocket Motors. Filed Jan. 22, 1969. Patented July 18, 1972. Not available NTIS.

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Assistant Chief for Patents: Office of Naval Research Code 302. Arlington, Va. 22217

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[FR Doc. 73-24759; Filed 11-20-73; 8:45 am]

Patents Available for Licensing or Sale

D. 220,231. DESIGN FOR BOOT SCRAPER. Don J. McDonald et al. % Burd, Braddock & Bartz, Attn: W. A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,194,609. SPROCKET AND CHAIN DRIVE. Lloyd Thurlow, % William A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,237,885. SPACE CRAFT. Jack L. Mohar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,295,265. CIRCULAR MULTI-PURPOSE BUILDING AND ITS ASSEMBLING METHOD. Naoto Hida. Correspondence to: Watanabe Patent Law Office, Koenji Minami 1-29-16, Suginami, Tokyo 166, Japan.

3,474,799. TOOTH SPACE CLEANER USING DENTAL FLOSS LINKS ON HOLDER. Vito P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,648,291. PROTECTIVE GARMENT FOR BEDRIDDEN PEOPLE. Alva L. Pankers. % William A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,648,649. BAKER'S SPRINKLING APPARATUS. Arthur Wasserman. % Burd, Braddock & Bartz. Attn: W. A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,501,072. COLLAPSIBLE SUPPORT FOR WIGS. Ronald R. Kovener, % W. A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,657,828. SCRAPER SNOWPLOW WITH PIVOTAL DOZER BLADES. Percy D. Anderson. % W. A. Braddock, 1300 Foshay Tower, Minneapolis, Minn., 55402.

3,658,588. PREPARATION OF STARCH FROM CELLULOSE TREATED WITH PHOSPHORIC ACID. James R. Harvey, 1337 Cavitt Road, Monroeville, Pa., 15146.

3,688,787. LONGITUDINALLY COLLAPSIBLE CANOPY FOR PICKUP TRUCKS AND ANALOGOUS FRAMES. Clark B. Feather, 5602 N. 68th St., Omaha, Nebr., 68104.

3,698,512. COLLAPSIBLE LADDER DEVICE. John V. Cebular, 2126 Shallcross St., Philadelphia, Pa.

3,706,319. SANITARY ANTI-POLLUTION VACUUM SEWAGE EVACUATOR. James E. Gaylor, 6742-D E. Calle La Paz, Tucson, Ariz., 85715.

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3,740,874. SNOW CLEARERS. Bovard & Cie, Optingenstrasse 16, CH-3000 Bern 25, Switzerland.

3,747,955. TRAILER FOR BICYCLE. Alexander D. MacAlpine, 50 N. Main St., Natick, Mass., 01760.

3,749,348. GUN BUTT HOLDER. Curry M. Bartlett, 29 Arlington St., Newton, Mass., 02158.

3,750,385. CALENDAR WATCH SETTING MECHANISM FOR VARIOUS MONTH LENGTHS. Hans Kocher, Erlenweg 24, 3294 Buren a/Aare, Berne, Switzerland.

3,752,209. WEBBING CLIP. David A. Swanson, 1217 W. 4th St., Tempe, Ariz., 85281.

3,754,227. HOTEL SIGNALLING SYSTEM. Sven Gote Anderson, Correspondence to: Werner W. Kleeman, Suite 301, Crystal Plaza 1, 2001 Jefferson Davis Highway, Arlington, Va., 22202.

3,756,000. CLEAN TIP SICKLE FIN. Ralph W. Kerr. Correspondence to: Sherman Levy, Washington Bldg., 15th St. and New York Ave. N.W., Washington, D.C. 20005.

3,757,469. PLANT WATERING AND FERTILIZING DEVICE. Charles T. Smith et al., 23 E. Chesapeake Ave. Towson, Md., 21204.

Philco-Ford Corporation is prepared to grant non-exclusive licenses on reasonable terms and conditions under the following patent.

Applications for license may be addressed to: Patent Counsel, Philco-Ford Corporation, Union Meeting Road, Blue Bell, Pa., 19422.

3,747,199. ALUMINUM BRAZING.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 21 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

Re. 27,755. SURFACE STRIP TRANSMISSION LINE AND MICROWAVE DEVICES USING SAME.

3,756,684. COARSE PINHOLE ARRAY FOR RECORDING IMPROVED REDUNDANT HOLOGRAMS.

3,756,847. METHOD FOR CONTROLLING THE COMPOSITION OF A DEPOSITED FILM.

3,756,891. MULTILAYER CIRCUIT BOARD TECHNIQUES.

3,757,033. SHADOWING SYSTEM FOR COLOR ENCODING CAMERA.

3,757,041. TELEVISION SPECIAL EFFECTS CONTROL PULSE GENERATING APPARATUS.

3,757,098. CARRY GENERATION MEANS FOR MULTIPLE CHARACTER ADDER.

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3,757,262. TOROIDAL DEFLECTION YOKE HAVING CONDUCTORS WOUND IN FLYBACK MANNER.

3,757,349. LABEL WRITING APPARATUS.

3,757,570. SIMULATED LOAD FOR INTERNAL COMBUSTION ENGINES.

3,757,571. SIMULATED LOAD FOR INTERNAL COMBUSTION ENGINES.

3,758,649. METHOD OF MANUFACTURING HOLOGRAPHIC REPLICAS.

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3,760,202. INPUT CIRCUITS FOR CHARGED-COUPLED CIRCUITS.

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3,760,305. DIELECTRICALLY LOADED WAVEGUIDE ASSEMBLY.

3,760,378. SEMICONDUCTOR MEMORY USING VARIABLE THRESHOLD TRANSISTORS.

3,761,264. METHOD OF DEFINING A DETAILED PATTERN ON A SURFACE OF A BODY.

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3,761,800. INTEGRAL CYCLE THYRISTOR POWER CONTROLLER.

3,761,801. MICROPOWER, LOW-VOLTAGE, REGULATOR CIRCUITS.

3,761,933. LOOP ANTENNA WITH DISTRIBUTED IMPEDANCE NEAR THE TERMINATING GAP.

General Electric Company is prepared to grant non-exclusive licenses under the following 105 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 5 patents may be addressed to: Patent Counsel, LSTG Divisions, General Electric Company, 1 River Rd., Bldg. #43, Schenectady, N.Y., 12305.

3,744,459. CONDENSATE DRAIN SUBCOOLER FOR MOISTURE SEPARATOR AND REHEATER.

3,747,336. STEAM INJECTION FOR A GAS TURBINE.

3,748,491. VARIABLE RATE LOAD SETBACK CIRCUIT.

3,748,540. TESTING AND MONITORING SYSTEM FOR REDUNDANT TRIP DEVICES.

3,752,597. FLOW PATH DEFLECTOR FOR AXIAL FLOW REVERSING GAS TURBINE.

Applications for license under the following 9 patents may be addressed to: Patent Counsel, Ordnance Systems Department, General Electric Co., 100 Plastics Ave., Pittsfield, Mass., 01201.

3,203,309. SINGLE PHOTOTUBE STABILIZED CONDENSATION NUCLEI METER.

3,455,265. AIR FILM DRAG REDUCTION STABILIZATION.

3,455,266. AIR FILM DRAG REDUCTION VISCOELASTIC ADDITIVES.

3,483,132. BUBBLE DISSOLUTION CONTROL BY FILM FORMATION.

3,522,425. APPARATUS FOR SELECTIVE SEPARATION OF IONS OF DIFFERENT MOBILITIES IN A GAS STREAM.

3,562,524. APPARATUS FOR MEASURING THE CONCENTRATION OF ALCOHOL VAPOR IN ALVEOLAR AIR.

3,581,503. METHOD OF INCREASING THE LIFE OF GAS BUBBLES.

3,588,496. RADIATION ANALYSIS APPARATUS HAVING AN ABSORPTION CHAMBER WITH PARTIALLY REFLECTIVE MIRROR SURFACES.

3,654,521. ELECTRONIC CARD MODULE THERMAL CLIP.

Applications for license under the following 10 patents may be addressed to: General Electric Company, Appliance Components Business Div., 1635 Broadway, Fort Wayne, Ind., 46804. Attn: Patent Counsel.

3,361,496. LUBRICANT RETENTION SYSTEM FOR DYNAMOELECTRIC MACHINE.

3,407,469. APPARATUS FOR DEVELOPING ELECTRICAL COILS IN INDUCTIVE DEVICES.

3,407,488. METHODS FOR ALTERING THE CONFIGURATION OF ELECTRICALLY CONDUCTIVE TURNS OF INDUCTIVE DEVICES.

3,407,493. PROCESS OF DEVELOPING ELECTRICAL COILS IN INDUCTIVE DEVICES.

3,420,335. LUBRICATION SYSTEM FOR ELECTRIC MACHINES.

3,432,907. APPARATUS FOR ALTERING THE CONFIGURATION OF ELECTRICALLY CONDUCTIVE TURNS OF INDUCTIVE DEVICES.

3,439,244. SINGLE-PHASE ALTERNATING CURRENT MULTIVOLTAGE INDUCTION MOTOR STATOR.

3,457,445. LAMINATED ROTORS AND STATORS WITH FLUX BARRIERS FOR SYNCHRONOUS INDUCTION MOTORS AND METHOD OF MAKING THE SAME.

3,524,089. DYNAMOELECTRIC MACHINE WITH EASY ACCESS TO CIRCUIT CONTROL TERMINALS.

3,541,365. LEAD CHANGING TERMINAL ASSEMBLY FOR A DYNAMOELECTRIC MACHINE.

Applications for license under the following 11 patents may be addressed to: General Electric Company, Construction Materials Division, 4755 Kingsway Drive, Suite 416, Indianapolis, Ind., 46205. Attention: Division Patent Counsel.

2,916,594. ELECTRIC HEATING.

2,941,632. PANEL CONSTRUCTION.

3,286,076. ELECTRIC HEATING DEVICE WITH ADJUSTABLE HEATING UNIT.

3,296,496. ELECTRIC HEATING DEVICES.

3,373,262. TEMPERATURE CONTROL CIRCUIT.

3,577,940. INCINERATOR.

3,578,948. SOLDERING AND DESOLDERING HAND TOOL EMPLOYING AIR BLAST OR SUCTION.

3,606,281. ROLLER HEARTH FURNACE WITH ROLL OSCILLATION CONTROLLER.

3,639,782. MAGNETIC SLAVE GATING CIRCUIT FOR FULL WAVE PHASE-CONTROLLED THYRISTOR CIRCUITS.

3,658,017. INCINERATOR.

3,672,839. BURNER-COOLER SYSTEM FOR GENERATING EXOTHERMIC GAS.

Applications for license under the following 17 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,590,911. COMBINATION REFRIGERATOR INCLUDING CONVERTIBLE COMPARTMENT.

3,599,872. SEALING MEANS IN A ROTATING SPRAY DEVICE.

3,600,111. HERMETIC COMPRESSOR.

3,622,755. TUBULAR HEATING ELEMENTS AND MAGNESIA INSULATION THEREFOR AND METHOD OF PRODUCTION.

3,694,626. ELECTRICAL RESISTANCE HEATER.

3,697,716. INDUCTION COOKING POWER CONVERTER WITH IMPROVED COIL POSITION.

3,697,717. INDUCTION COOKING APPLIANCE WITH MULTICYLINDER POWER CIRCUITS.

3,715,550. INDUCTION COOKING/WARMING APPLIANCE INCLUDING VESSEL SUPPORTING MEANS HAVING AN UNDULANT SURFACE AND TEMPERATURE SENSING MEANS ASSOCIATED WITH SAID SURFACE.

3,719,789. INDUCTION COOKING APPLIANCE INCLUDING TEMPERATURE SENSING OF INDUCTIVELY HEATED COOKING VESSEL BY "MODULATED" LIGHT.

3,739,596. REFRIGERATION SYSTEM INCLUDING HEAD PRESSURE CONTROL MEANS.

3,739,936. POUR HOLE CLOSURE FOR FOAM MOLD.

3,742,397. ELECTRONIC OVEN WITH FERRITE RF REJECTION FILTERS.

3,747,363. REFRIGERATOR INCLUDING THROUGH-THE-DOOR ICE SERVICE.

3,747,520. TRASH COMPACTOR HAVING MEANS FACILITATING TRASH REMOVAL THEREFROM.

3,749,081. WINDOWED OVEN DOOR WITH ROTATABLE INNER PANEL.

3,750,420. REFRIGERATOR INCLUDING AUTOMATIC ICEMAKER AND WATER PUMP DRIVEN THEREBY.

3,750,643. MULTIPLE POSITION DOOR LATCH MECHANISM.

Applications for license under the following 53 patents may be addressed to: General Electric Company, Construction Materials Division, 4755 Kingsway Drive, Suite 416,, Indianapolis, Ind., 46205. Attention: Division Patent Counsel.

2,825,024. VOLTAGE STABILIZING SYSTEM.

2,835,875. THEE-PHASE TRANSFORMER CONSTRUCTION.

2,845,235. ELECTROMAGNETIC WIRE TENSION DEVICE.

2,850,708. TRANSFORMER CORE CONSTRUCTION.

2,866,955. TAP STRUCTURE FOR REACTIVE DEVICE.

2,872,344. PROCESS OF IMPREGNATING A POROUS ARTICLE.

2,897,463. MOUNTING STRUCTURE FOR STATIONARY INDUCTIVE DEVICE.

2,902,661. COIL INSULATING AND LEAD ANCHORING MEANS FOR TRANSFORMER.

2,938,313. PROCESS OF POTTING ELECTRICAL APPARATUS.

2,960,647. SELF-SATURATING MAGNETIC AMPLIFIER.

3,007,125. INDUCTIVE DEVICE.

3,011,139. INDUCTIVE DEVICE AND FRAME THEREFOR.

3,011,140. COIL INSULATING AND LEAD ANCHORING MEANS FOR TRANSFORMERS.

3,023,493. APPARATUS AND METHOD FOR ASSEMBLING STACKED MAGNETIC CORES.

3,028,539. CURRENT TRANSFORMER.

3,028,567. STATIONARY INDUCTION APPARATUS.

3,037,177. STATIONARY INDUCTION APPARATUS.

D. 202,045. ELECTRICAL TRANSFORMER OR SIMILAR ARTICLE.

3,102,206. SATURABLE CURRENT TRANSFORMER-TRANSISTOR CIRCUIT.

3,114,196. METHOD FOR PRODUCING MAGNETIC CORE AND COIL ASSEMBLIES WITH GAPS IN THE MAGNETIC CORE.

3,135,939. STATIONARY INDUCTION APPARATUS.

3,155,894. VOLTAGE STABILIZING SYSTEMS.

3,161,843. RESIN-COATED SAND FILLED INDUCTIVE DEVICE.

3,212,041. ADJUSTABLE SLIDING BRUSH TRANSFORMER.

3,222,592. VOLTAGE STABILIZING CIRCUITS.

3,251,208. MACHINE AND METHOD FOR FORMING LAMINATIONS FOR MAGNETIC CORES.

3,263,099. POWER AMPLIFIER CIRCUIT.

3,270,308. PREFORMED MAGNETIC CORE STRUCTURE.

3,319,204. ADJUSTABLE SHUNT CORE.

3,329,908. A TRANSISTOR INVERTER WITH AN IMPROVED BASE CURRENT CONTROLLING CIRCUIT.

3,353,032. FLYBACK POWER AMPLIFIER CIRCUIT.

D. 210,130. ELECTRICAL TRANSFORMER OR SIMILAR ARTICLE.

3,371,876. COIL WINDING MACHINE.

3,374,452. TOROIDAL TRANSFORMER CONSTRUCTION AND METHOD OF CONSTRUCTING SAME.

3,413,541. APPARATUS FOR DETECTING INSULATION FAULTS IN MAGNET WIRE UTILIZING FIELD EFFECT TRANSISTOR.

3,436,707. ELECTRICAL INDUCTIVE APPARATUS WITH CLAMPING AND AIR-GAP ADJUSTING FRAME.

3,450,190. LOW PRESSURE CASTING APPARATUS.

3,456,223. VOLTAGE STABILIZING TRANSFORMER WITH VARIABLE AIR GAP CHARACTERISTICS.

3,458,843. BROADBAND SHIELDED TRANSFORMERS.

3,465,237. ALTERNATING CURRENT REGULATING APPARATUS WITH CLOSED LOOP FEEDBACK CONTROL.

3,466,583. ADJUSTABLE SLIDING BRUSH TRANSFORMER.

3,476,977. IMPULSE STARTING AND OPERATING CIRCUIT FOR GAS DISCHARGE LAMPS.

3,478,290. ADJUSTABLE SLIDING BRUSH TRANSFORMER AND METHOD OF PRODUCING A BRSUH TRACK THEREFOR.

3,480,897. ADJUSTABLE SLIDING BRUSH TRANSFORMER AND METHOD OF PRODUCING SAME.

3,488,839. METHOD OF MAKING A TAP CONNECTION TO A WINDING OF A VARIABLE TRANSFORMER.

3,501,771. ROOT MEAN SQUARE VOLTAGE REGULATOR.

3,522,569. MAGNETIC CORE AND COIL ASSEMBLY HAVING A GAP WHICH IS FIXED BY A REINFORCED ADHESIVE LAYER SPANNING THE GAP.

3,537,051. ADJUSTABLE SLIDING BRUSH TRANSFORMER.

3,600,664. OVERCURRENT PROTECTION FOR SOLID-STATE VOLTAGE REGULATOR.

3,623,279. METHOD OF PRODUCING A BRUSH TRACK FOR AN ADJUSTABLE SLIDING BRUSH TRANSFORMER.

3,646,439. REGULATOR WITH OPTICAL FEEDBACK ARRANGEMENT WHEREIN BOTH INPUT AND OUTPUT VOLTAGE ARE SENSED.

3,693,127. MAGNETIC SHUNT.

3,721,865. PLASTIC CASE POWER SUPPLY.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 24, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-03-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-11-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink;.Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-08-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-28-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-17-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-18-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-08-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-07-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-18-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-17-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-10-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-05-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-21-72

Expiration of patents: The patents within the range of numbers indicated below expire during November 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,772,415 to 2,775,761, inclusive
Plant Patents..... Numbers 1,532 to 1,542, inclusive

REISSUES

DECEMBER 18, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,841
METHOD OF PROCESSING COFFEE

William W. Niven, Jr., late of Prairie Village, Kans., by Jack M. Campbell, administrator, Kansas City, Mo., assignor to The Folger Coffee Company, Cincinnati, Ohio

Original No. 3,458,320, dated July 29, 1969, Ser. No. 701,012, Jan. 26, 1968, which is a continuation of abandoned application Ser. No. 356,593, Apr. 1, 1964. Application for reissue July 9, 1971, Ser. No. 161,030

Int. Cl. A35f *1/08*

U.S. Cl. 99—71 10 Claims

Instant coffee is produced by a dual extraction process in which the two coffee extracts are ultimately combined to provide the final product. In the first extraction water at a temperature of 210° F. is added to ground coffee in the ratio of 2.5 to 4.5 parts by weight of water to each part of ground coffee. The mixture is permitted to reach equilibrium conditions, resulting in the production of a coffee extract having approximately 7% by weight of the water soluble components of the ground coffee therein. The remaining grounds are then subjected to the second extraction process.

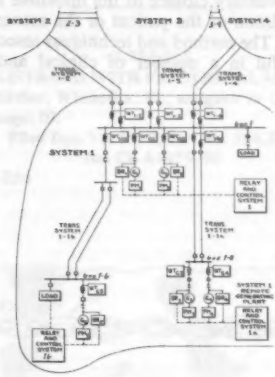
27,842
METHODS OF IMPROVING THE STABILITY OF INTERCONNECTED POWER SYSTEMS

Robert H. Park, Brewster, Mass., assignor to Fast Load Control, Inc., Brewster, Mass.

Original No. 3,515,893, dated June 2, 1970, Ser. No. 525,615, Feb. 7, 1966. Application for reissue June 2, 1972, Ser. No. 259,337

Int. Cl. H02j *3/38*

U.S. Cl. 307—52 23 Claims



Control systems *and methods of control* for changing *the amount of power generated and the magnitude of connected load and for influencing* the distribution of power flow within [an interconnected] a power system *or an interconnection of systems* through the execution of changes in the driving power of prime movers, and changes in connected electrical loads, wherein initiation of control action is responsive to suddenly occurring events adapted to cause, or which could cause, system instability, and the power flow changes take place in such a way and with sufficient speed as to prevent or oppose development of instability.

27,843
PROCESS FOR PREPARING PEROXYACETALS AND PEROXYKETALS

Giuliano Ballini, Ferrara, and Carlo Bujtar, Bologna, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Original No. 3,468,962, dated Sept. 23, 1969, Ser. No. 550,643, May 17, 1966. Application for reissue Sept. 14, 1971, Ser. No. 180,484

Claims priority, application Italy, May 21, 1965, 11,441/65

Int. Cl. C07c *41/00, 43/30, 73/00*

U.S. Cl. 260—610 R 18 Claims

Preparing *peroxyethers* [peroxyacetals and peroxyketals] by reacting alkylidene diperoxide with divalent alcohol, desirably in the presence of an acid catalyst.

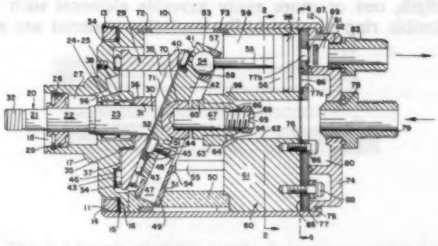
27,844
COMPRESSOR UNIT WITH SELF-CONTAINED DRIVE MEANS

John W. Olson, Jr., Oklahoma City, Okla., assignor to John E. Mitchell Company, Dallas, Tex.

Original No. 3,552,886, dated Jan. 5, 1971, Ser. No. 775,334, Nov. 13, 1968. Application for reissue Sept. 18, 1972, Ser. No. 290,004

Int. Cl. F04b *1/14*

U.S. Cl. 417—269 7 Claims



A multiple piston compressor unit and drive means therefor for use in mobilized air conditioning systems such as used with automotive vehicles characterized by compact size, smooth performance, economy, minimum performance, weight, whereby high volumetric compressor efficiency is attained at low speeds as well as high speeds without adverse torque peak loads on the driving means; and including piston actuating means of such simple form and of such low consumption of power by friction and slight generation of heat that lubrication by oil mist circulating therethrough with suitable refrigerant through the refrigeration circuit provides sufficient lubri-

cation and the usual oil sump is eliminated, thereby providing a compressor unit of cylindrical form with the axis of the cylinder coinciding with the axes of all components of the piston actuating means.

27,845

PREPARATION OF WHITE OILS WITH ORGANO-ALUMINUM ACTIVATED IRON GROUP METAL CATALYSTS

John B. Gilbert and Robert Kartzmark, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

No Drawing. Original No. 3,658,692, dated Apr. 25, 1972, Ser. No. 871,943, Oct. 28, 1969. Application for reissue Sept. 18, 1972, Ser. No. 290,063

Int. Cl. C10g *23/02*

U.S. Cl. 208—89 **35 Claims**

A process for upgrading and improving the color, odor and stability of petroleum oils to render the latter suitable for use in specialty applications. Raw distillates and semi-refined oils of suitable boiling range and viscosity are refined, or further refined, in a hydrogenation process, at suitable conditions, in the presence of a catalyst which comprises a support and a transition metal complexed with an organometallic compound, to yield colorless mineral oils, i.e., white oils. These highly refined oils are used in pharmaceuticals and cosmetics and similar compositions requiring oil components that meet certain high quality standards.

27,846

MEANS IN ELECTRIC INSULATORS FOR KEEPING THE UPPER SIDE OF THE INSULATOR PLATE FREE FROM DEPOSITS REDUCING THE FLASH-OVER STRENGTH

Lars-Goran Virsberg, Vasteras, Sweden, assignee by Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

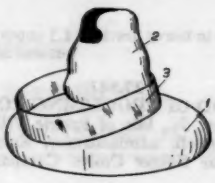
Original No. 3,532,804, dated Oct. 6, 1970, Ser. No. 810,988, Mar. 27, 1969. Application for reissue Apr. 19, 1973, Ser. No. 352,719

Claims priority, application Sweden, Apr. 10, 1968, 4,806/68

Int. Cl. H01b *17/52*

U.S. Cl. 174—139 **7 Claims**

In order to keep the upper side of an electrical insulator plate free of deposits which reduce the flash-over strength, one or more easily movable elements such as a flexible ring of electrically insulating material are arranged above the upper side of the plate, the element being capable of being kept in movement by the wind and



being at least periodically in movable contact with the upper side of the insulator plate.

27,847

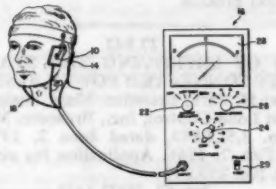
METHOD OF PRODUCING A MUSCULARLY BALANCED CLOSURE OF THE HUMAN MANDIBLE

Bernard Jankelson, 1451 Medical Dental Bldg., Seattle, Wash. 98101

Original No. 3,593,422, dated July 20, 1971, Ser. No. 855,480, Sept. 5, 1969. Application for reissue Feb. 14, 1972, Ser. No. 225,722

Int. Cl. A61c *9/00*

U.S. Cl. 32—21 **17 Claims**



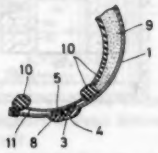
Mandibular closure is produced by simultaneous and even electrical programmed stimulation of the motor nerves controlling the masticatory and facial muscles. The resultant involuntary closure of the mandible is independent of the volition of the patient or the manual guidance of the dentist. The method and techniques associated therewith are useful in a number of clinical and diagnostic techniques.

PATENTS

GRANTED DECEMBER 18, 1973

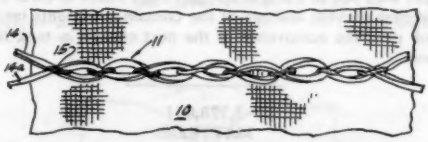
GENERAL AND MECHANICAL

3,778,844
APPARATUS FOR PREVENTING WHISTLING AT HEARING OPENINGS IN HELMETS
Makoro Hori, Wako, and Takenori Yamamoto, Fukuoka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 25, 1972, Ser. No. 256,916
Claims priority, application Japan, May 31, 1971, 46/44224
Int. Cl. A42b 3/00
U.S. Cl. 2—3 R **3 Claims**



A helmet is provided including a tab portion in which there are two hearing openings or ear holes. These ear holes are surrounded at least in part by an inclined surface which is located on the exterior of the helmet. The inclined surfaces are each of conical form. According to one embodiment, the inclined surfaces completely encircle the associated ear holes. According to another embodiment of the invention, the inclined surfaces merely extend forwardly and rearwardly of the ear holes. Each side of the helmet may be provided with a plurality of ear holes and related surfaces. Each ear hole is covered internally with a thin porous film, which is covered by a fabric.

3,778,845
WAISTBAND WITH FRICTIONAL MEANS
Samuel E. Miller, Winnetka, Ill., assignor to QST Industries, Inc., Chicago, Ill.
Filed Dec. 11, 1972, Ser. No. 314,223
Int. Cl. A41f 9/00
U.S. Cl. 2—236 **6 Claims**

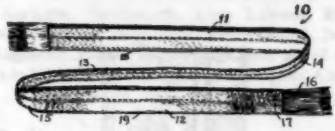


Textile fabric provided with an outstanding continuous ridge comprising lays of rubber thread which are superimposed on one another, the respective lays each being disposed as a sine wave of the same frequency to assume a mutually intersecting relation and the lays being anchored to the fabric by stitches of conventional, relatively non-elastic yarn.

3,778,846
BATHING CAP
Susan Grace Norie, P.O. Box 217, Campbell River, British Columbia, Canada
Filed Nov. 27, 1972, Ser. No. 309,626
Int. Cl. A42b 1/12
U.S. Cl. 2—68 **1 Claim**

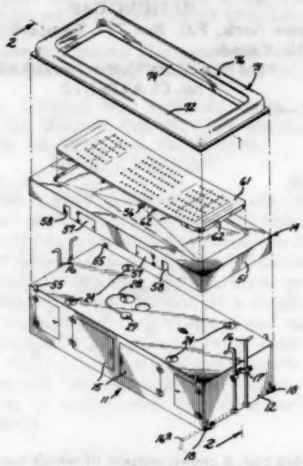
A bathing cap, a crown portion of which has a loose fit on the wearer's head and a marginal portion of which has a stretch fit around the wearer's head. An air seal is effected between the marginal edge portion and the wearer's head by an elastic inflatable tube which extends around inside the cap adjacent to the marginal edge portion. The inflatable tube and the crown portion are inflated by air filler tubes which are long enough to reach the wearer's mouth when the cap is being worn and which can thereafter be tied in a decorative knot.

3,778,847
NECK BAND
Eva Lundin, Haggsjovik 12, Ostersund, Sweden
Filed Dec. 19, 1972, Ser. No. 316,533
Int. Cl. A41d 25/06
U.S. Cl. 2—146 **9 Claims**



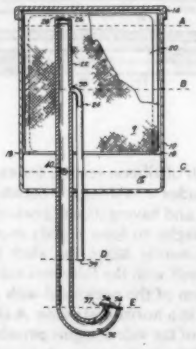
This is a length of ribbon textile, for example about 3 cms. wide which includes a mid-length neckband portion passing around the neck and having its end portions joined along their adjacent side margins to form a body section extending from the throat downwardly along the shirt front. The fabric is folded over on itself with the fold lines making angles of about 45° at the junction of the neckband with the body section, to dispose the loop in a horizontal plane. A slide fastener secured to the underside of the side margins permits opening or closing the upper end of the body section for putting on or taking off the article. The width of the neckband is preferably abruptly reduced adjacent the flat folds to about 2 cms. Woven, knitted or braided fabric ribbon may be used, although woven material having relatively taut weft threads and loose warp threads is preferred to minimize transverse stretch.

3,778,848
MOBILE HOSPITAL BATHING UNIT
Timothy J. W. Lyytinen, P.O. Box 23, Marcell, Minn.
Filed Aug. 17, 1971, Ser. No. 172,525
Int. Cl. A47k 3/00
U.S. Cl. 4—173 **15 Claims**



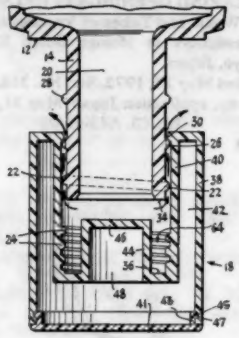
A mobile hospital bath unit having a shallow bathing assembly consisting of a perforated stainless steel bed for the patient which is surrounded by an inflatable member to contain the bathing water. The bathing assembly is mounted for both vertical and lateral movement with respect to a wheeled housing for easy accessibility to the patient. The housing includes lifting apparatus, supply and drainage water tanks, and means for pumping water to the bathing assembly.

3,778,849
AUTOMATIC DISPENSING APPARATUS
Lary L. Foley, San Francisco, Calif., assignor to The Clorox Company, Oakland, Calif.
Filed Mar. 8, 1972, Ser. No. 232,758
Int. Cl. E03d 9/03
U.S. Cl. 4—228 **11 Claims**



An automatic dispensing apparatus for dispensing a solution formed from a solid material into a process stream when the liquid level of the process stream reaches a designated level. The apparatus is particularly adaptable to use in a toilet flush tank and comprises a siphon arrangement operative to dispense a metered amount of the solution into the flush tank only toward the end of the flush cycle.

3,778,850
AUTOMATIC LIQUID DISPENSER FOR FLUSH TANKS AND THE LIKE
James W. Bryan, 15 Madison Springs Dr., Madison, Conn.
Filed May 19, 1972, Ser. No. 255,056
Int. Cl. A47k 13/30
U.S. Cl. 4—227 **22 Claims**

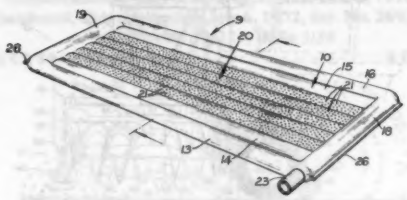


A liquid dispenser for discharging metered amounts of liquid into a flush tank in response to the rise and fall of the tank liquid level. The dispenser comprises a container having a discharging neck portion provided with external screw threads, and having a captive screw cap which has internal cooperable screw threads and additionally has an internal annular captivating bead spaced from its threads. The open end of the container neck includes a resilient sealing lip which is engageable by a sealing ring portion of the cap when the latter is fully threaded in or down whereby the cap constitutes a sealed closure for the container. As the cap is unscrewed, its captivating bead is forced past the first of two spaced-apart annular beads on the container neck, which now operate to restrict axial movement ot the cap between extended and retracted positions. For both of these positions the cooperable screw threads of the assemblage are free of each other. The cap has annular walls which define an air chamber providing buoyancy when the cap is immersed in a liquid. With the container inverted and the cap assembled thereto, the latter is urged between extended and retracted positions in response to changes in the level of the liquid in the tank. Responding to a fall in the liquid level, the cap moves by gravity to its extended position and a recess therein receives a predetermined quantity of liquid from the container. As the tank level rises, the cap is slowly urged by buoyant force to its retracted position whereby liquid contained in the recess is displaced therefrom, thus effecting a dispensing of the liquid into the tank. In the retracted position of the cap, the bead thereof is held in abutment with one of the spaced-apart neck beads to form a seal and thus prevent leakage of the container contents into the tank until the occurrence of the next change in tank liquid level.

3,778,851
MATTRESS
Frederick Hugh Howorth, Nr. Chorley, Lancashire, England, assignor to Haworth Air Conditioning Limited, Bolton, Lancashire, England
Filed Feb. 24, 1972, Ser. No. 228,924
Claims priority, application Great Britain, Mar. 2, 1971, 5,838/71
Int. Cl. A47c 27/08, 27/18
U.S. Cl. 5—347 **5 Claims**

A mattress, for use in treating a patient who has undergone extensive surgery or who has been severely burned, comprises an upper panel a lower panel and means for supplying air to the space between said panels, said lower panel being of air-

impermeable material and at least a part of said upper panel being perforate to allow conditioned air to issue therefrom to



impinge on and pass around said patient to substantially isolate said patient from ambient air and to reduce strain on his heart and promote healing.

3,778,852

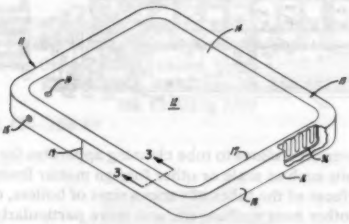
WATER BED

Russell C. Penn; Wayne P. Penn, and Thomas H. Roughly, all of Fairfax, Calif., assignors to Penn International Industries, Inc., San Anselmo, Calif.

Filed Mar. 29, 1971, Ser. No. 128,957

Int. Cl. A67c *27/08*

U.S. Cl. 5—348 WB **8 Claims**



A water bed including a surrounding pneumatic chamber.

3,778,853

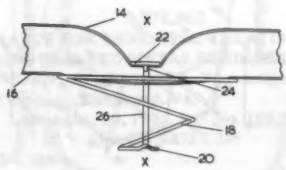
METHOD AND APPARATUS FOR BUTTONING UPHOLSTERY

John Cooper, West Bridgford, England, assignor to Matramatic Company Limited, Basford, Nottingham, England

Filed Dec. 17, 1971, Ser. No. 209,313

Int. Cl. A47c *27/00*

U.S. Cl. 5—356 **4 Claims**



A method of buttoning upholstery comprises attaching a button to a support bearing against the undersurface of the upholstery so that the underside of the button is urged against the wearing surface of the upholstery.

3,778,854

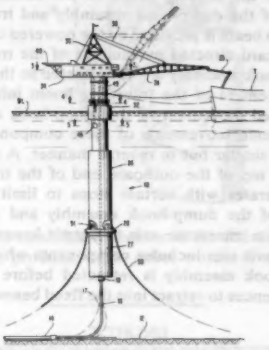
MOORING AND OIL TRANSFER APPARATUS

Philip Y. Chow, Orinda, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.

Filed Mar. 16, 1971, Ser. No. 124,738

Int. Cl. B63b *35/44*; B65d *87/08*; E02d *17/00*

U.S. Cl. 9—8 P **13 Claims**



The apparatus includes a spar buoy comprised of an elongated column mounting a platform at its upper end, the platform carrying a helicopter pad and a movable boom for assisting the mooring of tankers to the buoy and off-loading oil to the tanker. The platform includes a ballast system providing an adjustable counterweight to the movement of the boom. The buoy is anchored and oil lines from production or control platforms or underwater oil storage tanks extend upwardly through the buoy to the boom for delivering oil to an awaiting tanker. The buoy has an anchoring collar located therealong in a manner to limit the tilt angle of the buoy within a predetermined angle and to limit the lateral excursion of the lower end of the buoy through which the oil receiving lines pass to within a specified range. The buoy is constructed to obtain a long natural period whereby the amplitude of vertical movement due to excitation forces caused by wave action is reduced.

3,778,855

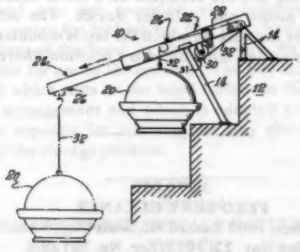
TELESCOPING GRAVITY DAVIT

Nikolai Kariagin, Chatsworth; Jerry Laibson; Eric Ralph Hooper, both of San Diego; Jim Cowden Keogh, Jr., Cardiff, and Augustine Joseph Ragan, El Cajon, all of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed Dec. 15, 1972, Ser. No. 315,514

Int. Cl. B63b *23/02*

U.S. Cl. 9—41 **13 Claims**



A davit for use in lowering and raising life crafts such as life boats and survival capsules with respect to decking upon which the davit is supported. The davit comprises a fixed hollow beam which slidably receives a travelling boom which, in

turn, houses a dump-hook assembly. The latter is capable of movement along the travelling boom. A cable extends from a power source through the davit and over the dump-hook to suspend the life craft beneath the davit. The fixed beam is canted so that its outboard end extends downwardly at an angle which permits outboard-directed movement, under the influence of gravity, of the travelling boom and dump-lock assembly once the holding brake or mechanism is released. Retraction of the dump-hook assembly and travelling boom into the fixed beam is provided by the powered cable.

The outboard-directed movements of the travelling boom and dump-hook assembly are coordinated so that termination of such movement of the travelling boom initiates the outboard-directed movement of the dump-hook assembly. The inboard-directed movements of these components are coordinated in a similar but in reverse manner. A cut-out is provided in the top of the outboard end of the travelling boom which cooperates with certain stops to limit the outboard movement of the dump-hook assembly and to cause it to rotate about a transverse axis to permit lowering of the life craft. The davit also includes components which ensure that the dump-hook assembly is retracted before the travelling boom commences to retract into the fixed beam.

3,778,856

STRING LASTING

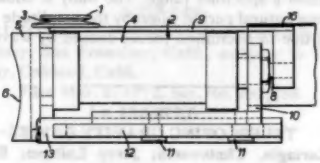
Gerald Anthony Christie, Bath, and Edwin Thomas Bressington, Bristol, both of England, assignors to Salient Engineering Limited, Bristol, England

Filed Nov. 6, 1972, Ser. No. 303,819

Claims priority, application Great Britain, Nov. 5, 1971, 51,464/71

Int. Cl. A43d *15/00*

U.S. Cl. 12—7.9 **14 Claims**



Apparatus for string lasting the uppers of shoes or boots has a power operated device for pulling the string. Clamping means, conveniently one or more bollards, are provided for holding the string and are mounted on a linear actuator such as pneumatic piston and cylinder device. The actuator is either carried by the base on which the last is mounted or is independent thereof and movable into a position where it reacts against the last.

3,778,857

FEED BUNK CLEANER

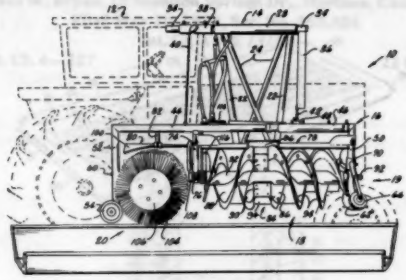
Robert D. Hughes, 1008 Russell St., Scott City, Kans.

Filed Nov. 22, 1971, Ser. No. 201,068

Int. Cl. B08b *7/04*; A46b *13/02*; B08b *1/04*

U.S. Cl. 15—4 **9 Claims**

A cleaning apparatus having an auger to remove material from and to move material in a trough to a collection point with a brush apparatus behind the auger to move material in the trough, a powering device to drive the auger, and a frame mounting the auger and brush apparatus to support same. This invention is a cleaning apparatus adapted to remove material



from a trough, move it through the trough and remove it completely from the trough.

3,778,858

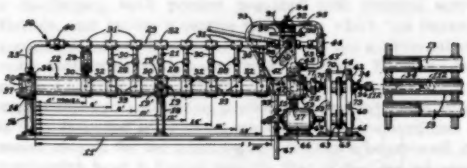
HEAT EXCHANGER TUBE REAMER AND CLEANING APPARATUS

Joseph C. Fuller, 1640 E. Greenway St., Mesa, Ariz.

Filed Dec. 15, 1972, Ser. No. 315,666

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.1 R **9 Claims**



This invention relates to tube cleaning apparatus for removing deposits such as scale or other foreign matter from the interior surfaces of the tubes of various sizes of boilers, condensers and other heat exchangers, and more particularly to improvements in such apparatus limiting whipping action of the cleaning shafts and utilizing fluid under pressure for controlling the cleaning shafts for cleaning purposes in a new and improved manner.

3,778,859

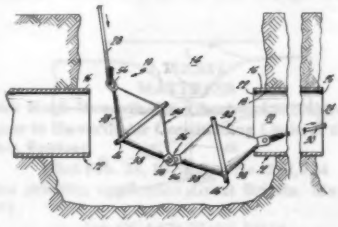
PIPELINE SQUEEGEE APPARATUS

Frank R. Donnelly, Rockaway, N.J., assignor to Spin Company, Newfoundland, N.J.

Filed Oct. 2, 1972, Ser. No. 294,013

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.3 R **9 Claims**



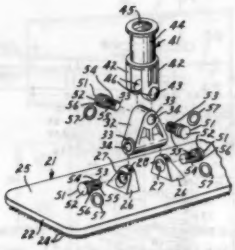
A pipeline squeegee is provided for removing excess water and debris from the interior of a pipeline. The squeegee apparatus is in the form of a plurality of dual cone units which traverse the interior of the pipeline.

3,778,860

MOP FRAME ASSEMBLY

James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 79,212, Oct. 8, 1970, abandoned. This application July 6, 1972, Ser. No. 269,415
Int. Cl. A47l *13/254*; B25g *3/38*
U.S. Cl. 15—147 A 4 Claims



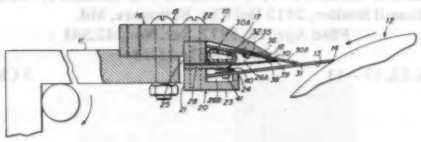
A mop frame assembly having an improved universal joint which permits universal positioning of the handle and frame. The universal joint is formed of a pair of bifurcate holding members and a connecting member that are held together by locking plugs. Each locking plug has a resilient friction ring adapted to provide resistance to pivotal movement of the holding members and the connecting member.

3,778,861

BLADEHOLDERS FOR DOCTORS AND SCRAPERS

Ronald F. Goodnow, Leicester, Mass., assignor to Lodding Engineering Corporation, Auburn, Mass.

Filed June 26, 1972, Ser. No. 266,492
Int. Cl. D21g *3/00*
U.S. Cl. 15—256.51 23 Claims



A bladeholder for doctors, scrapers and the like has separate regions for a blade and a pressure or rocker plate. The blade can be removed, installed, or adjusted in one region without disturbing the rocker plate and associated parts in the other region. The rocker plate has constant "stick-out," and can be fitted with resilient profiling devices. An improved profiling device is shown having armor cladding to prevent damage due to pressure.

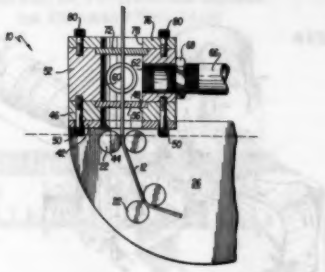
3,778,862

APPARATUS FOR REMOVING TREATING LIQUIDS FROM TREATED METAL STRIP PRODUCTS

Sidney B. Kesler, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 20, 1971, Ser. No. 190,832
Int. Cl. A47l *5/38*
U.S. Cl. 15—306 A 8 Claims

A method of and apparatus for removing treating liquids from treated metal strip products employing air or gas under pressure. The treating liquid is removed by the wiper apparatus substantially immediately after its exit from the treating liquid. An air or gas chamber is provided intermediate a pair of inlet and outlet orifices and the metal strip product is passed therethrough in order to remove the treating liquid. While both the outlet and inlet orifices conform substantially to the cross section of the metal strip product, the outlet orifice is made slightly smaller than the inlet orifice whereby an



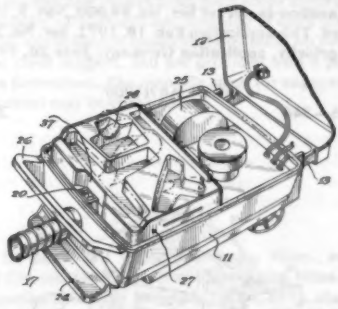
air or gas flow is established counter to the direction of feed of the metal strip product, or, in other words, toward the inlet orifice.

3,778,863

VACUUM CLEANER IMPLEMENT TRAY

George A. Westergren, White Bear Lake; David G. Koland, Sandstone, and Stanley R. Crooks, Shakopee, all of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 2, 1972, Ser. No. 277,321
Int. Cl. A47l *5/00*
U.S. Cl. 15—323 17 Claims



A vacuum cleaner having a canister including a base and a hood cooperatively defining an internal storage space in which is removably received a tray for holding implements, such as tools adapted for use with the vacuum cleaner. The tray is supported above the filter bag space and is readily removable therefrom when the hoood is moved to an open position. The hood and tray are provided with cooperating releasable locking means for locking the tray in a closed position to the top surface of the hood, in which position the implements are accessible for use by the operator. The tray includes a depending wall which rests on the hood surface in the implement-exposing arrangement and which is adapted to cooperate with suitable supports for retaining the tray above the filter bag space in the storage position.

3,778,864

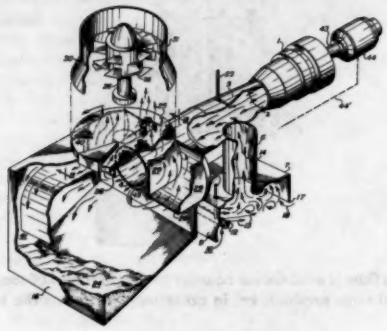
TURBINE POWERED SURFACE VACUUM CLEANING DEVICE

William S. Scherer, 11438 N. 70th St., Scottsdale, Ariz.

Filed Apr. 10, 1972, Ser. No. 242,571
Int. Cl. A47l *5/18, 9/20*
U.S. Cl. 15—339 12 Claims

A self-propelled surface vacuum cleaning device which employs a turbine engine to provide for suction pickup of dirt and

debris from a surface and also employs the turbine engine exhaust to assist in burning combustibles contained in the debris



prior to the depositing of the non-combustible debris in a holding receptacle.

3,778,865

ATTACHMENT FOR A UTILITY VEHICLE OR FOR A TRAILER OF SUCH VEHICLE

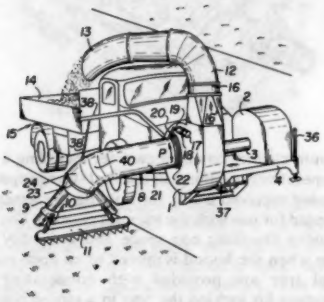
Alfred Schmidt, Jr., Friedrichstrasse 17, and Guenter Pastari, Im Frongarten 20, both of St. Blasien, Germany

Continuation-in-part of Ser. No. 88,000, Nov. 9, 1970, abandoned. This application Feb. 18, 1972, Ser. No. 227,517

Claims priority, application Germany, June 20, 1970, P 20 30 579.7

Int. Cl. A47l 9/00

U.S. Cl. 15—340 **26 Claims**



The invention relates to an attachment for a utility vehicle or trailer pulled by the utility vehicle. The attachment picks up items such as mowed grass or dirt, on or adjacent to a road for loading into the vehicle. A suction fan with inlet and outlet conduits forms part of the attachment. The inlet or suction conduit has a horizontal leg and a trailing leg. A suction nozzle is secured to the free end of the trailing leg. Rotating means are provided between a fan housing and said horizontal leg and/or between said nozzle and said trailing leg for rotating the suction conduit about a horizontal axis and/or the nozzle about the sloping axis of said trailing leg, whereby the nozzle is maintained in a trailing position and enabled to follow automatically the shape of the ground.

3,778,866

DOOR CLOSER

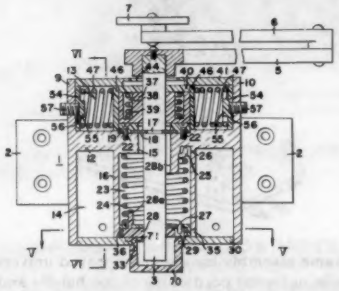
Yoshitaka Nakanishi, 12-9, 5-chome Yawata, Ichikawa, Japan

Filed Nov. 15, 1971, Ser. No. 198,709

Claims priority, application Japan, Nov. 20, 1970, 45/102100

Int. Cl. A22c 21/00

U.S. Cl. 16—49 **6 Claims**



A door closer comprises a torsion spring effecting to rotate a door in the closing direction, a brake drum rotating together with rotation of the door, and at least two relative brake shoe units provided at the position of inserting the brake drum for preventing rotation of the brake drum and reducing a closing speed of the door and for frictionally and resiliently pressing brake surfaces of the brake drum, respectively.

3,778,867

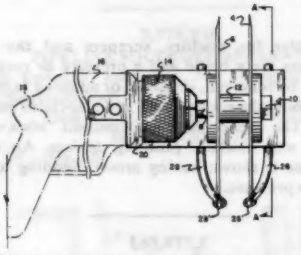
METHOD AND APPARATUS FOR EVISCERATING ANIMALS AND FOWL

Millard S. Sindler, 3701 Twin Lakes Ct., Baltimore, Md., and Russell Sindler, 2413 Hol Cir., Baltimore, Md.

Filed Apr. 10, 1972, Ser. No. 242,341

Int. Cl. A22c 25/18

U.S. Cl. 17—11 **3 Claims**



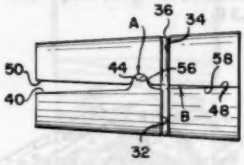
A method and apparatus for eviscerating animals and fowl, the apparatus having a pair of double circular rotatable cutter blades of substantially the same diameter and operating in spaced relationship in respect to each other and in parallel planes, rotatably supported on a supporting means, including guides fixedly secured to the support extending outwardly from the support in close proximity to a portion of the cutting blades for guiding the cutting blades in a predetermined line over the outer surface of the animal or fowl and along each side of the vertebrae for separating the same along with the viscera from the remainder of the carcass.

3,778,868

CHUCK ASSEMBLY

William F. Kelly, 100 Bellaire Dr., New Orleans, La.

Filed July 30, 1971, Ser. No. 167,682
Int. Cl. F16g 11/04
U.S. Cl. 24—115 R 8 Claims



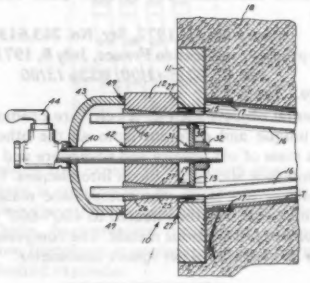
A chuck assembly for retaining a tendon or the like within an anchor or case. The chuck assembly includes at least two longitudinally tapered jaw elements which are held by a resilient member in facing engagement, a portion of the opposing faces thereof being beveled to effect biasing of the smaller end of the chuck to an open position. The opposed jaws are provided with lugs and complemental recesses for preventing relative longitudinal and transverse movement of the jaw elements during use.

3,778,869

APPARATUS FOR DETENSIONING STRANDED CABLE

James S. Andrews, Westminster, Colo., assignor to American Stress Wire Corporation, Englewood, Colo.

Filed Mar. 15, 1971, Ser. No. 124,159
Int. Cl. F16g 11/04
U.S. Cl. 24—115 R 11 Claims



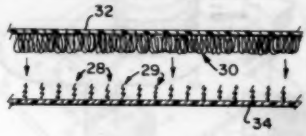
A detensioning method and apparatus has been devised for detensioning one or more stranded cables which are anchored or set under tension in cable passageways by wedges seated at the ends of the passageways. The detensioning device which is made up of push tubes, a push plate and a detensioning screw is installed within the cable assembly so that the anchored cables may be detensioned, for instance, to replace a defective cable, by retensioning the cables, unseating the wedges and operating the detensioning screw to retract the push tubes against the wedges thereby retaining the wedges clear of the cables to permit detensioning and replacement. After the defective cable has been replaced, the cables are retensioned and anchored under tension by reseating the wedges.

3,778,870

STATISTICAL HOOK AND LOOP AREA FASTENERS

Robert A. Bennett, Shelton, Conn., assignor to Mattern, Ware and Dairs, Bridgeport, Conn.: a part interest

Filed Dec. 29, 1971, Ser. No. 213,464
Int. Cl. A44b 17/00, 13/00
U.S. Cl. 24—204 R 4 Claims



A separable hook-and-loop area fastener incorporates a loop pile sheet and a facing hook sheet presenting multiple-sawtooth hooks.

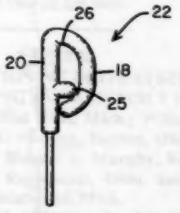
The hook sheet of the fastener is formed by weaving, looping or otherwise engaging with a backing sheet a continuous plastic filament, preferably of nylon or the like, which has been permanently crimped into a zig-zagged sawtooth configuration by passing the same between a pair of oppositely sawtoothed forming rolls. The continuous plastic filament loops are preferably formed in a plurality of aligned rows so that a plurality of loops may be engaged by a common elongated knife edge and simultaneously cut. The loops preferably are large enough and the sawtooth formations small enough so that a plurality of sawteeth are provided in each loop. When cut, the zig-zag sawtooth monofilaments stand up perpendicular to the sheet support, and are provided with a plurality of hook-like formations. The loop pile sheet for engagement with the hook sheet may be conventional.

3,778,871

CONNECTORS

Wilfred L. Ratte, Jr., White Bear Lake, Minn., assignor to Water Gremlin Company, White Bear Lake, Minn.

Continuation of Ser. No. 830,447, June 4, 1973, abandoned.
This application July 15, 1971, Ser. No. 163,033
Int. Cl. A44b 13/02; A01k 95/00
U.S. Cl. 24—236 2 Claims



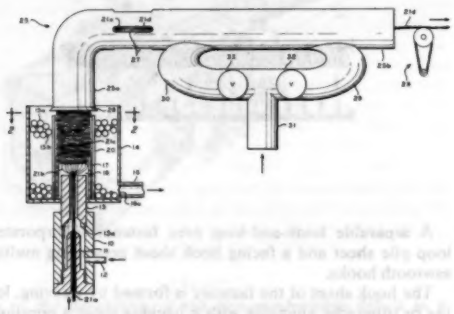
A connecting element molded from a plastic such as nylon with a straight portion at one end and a looped portion at the other end for attachment to fishing lines and the like. The straight portion is inserted through a hole in the object being connected and melted so as to enlarge it and prevent its withdrawal from the hole.

3,778,872

METHOD AND APPARATUS FOR TEXTURING YARN

Richard C. Newton, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 12, 1971, Ser. No. 133,164
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 9 Claims



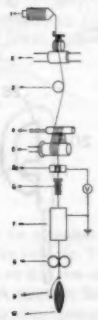
A wad of textured yarn is removed from the texturing apparatus by passing the wad into the inlet of an elongated tube having one or more openings intermediate the ends. A fluid is passed through the tube toward the inlet end, with a substantial quantity of the fluid being vented through the opening. This cools the yarn and assists in breaking up the wad.

3,778,873

PROCESS FOR THE PRODUCTION OF COMPOSITE FIBERS, APPARATUS SUITABLE TO REALIZE THE SAME AND FIBERS OBTAINED THEREBY

Walter Conti, and Pasquale Corsini, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato, Milanese, Italy

Filed June 10, 1971, Ser. No. 151,860
Claims priority, application Italy, June 10, 1970, 25751 A/70
Int. Cl. D02j *1/22*; D02g *1/18*
U.S. Cl. 28—72.3 3 Claims



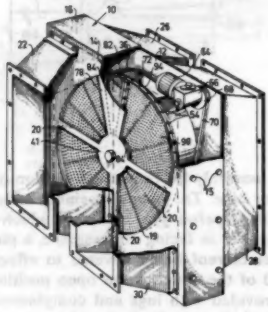
A synthetic composite fiber is produced by a novel process and apparatus which includes drawing the yarn by air-suction and subjecting the yarn to a high temperature thermal shock to obtain a rigid wave or crimp in the fiber and thereafter applying a continuously high but decreasing temperature to obtain uniform crystallization of the fiber.

3,778,874

METHOD OF FABRICATING A LAMINATED WHEEL-LIKE BODY FOR THE TRANSFER OF THERMODYNAMIC CHARACTERISTICS BETWEEN TWO FLUID STREAMS

Per Gunnar Norback, 33, Askrikevagen, Lidingo, Sweden

Division of Ser. No. 745,431, July 17, 1968, Pat. No. 3,587,723. This application Feb. 19, 1971, Ser. No. 116,926
Int. Cl. B21d *53/02*; B23p *15/26*
U.S. Cl. 29—157.3 R 2 Claims



Method of producing a wheel-like transferrer body for a rotary transferrer of thermodynamic characteristics between a plurality of fluid streams from rectangular blocks of corrugated sheet material forming a mass of open-ended passageways through which the streams are passed in thermodynamic exchange relationship with one another.

3,778,875

METHOD FOR PRODUCING ORNAMENTAL ARTICLES

Pascal Pierre Morabito, 13, Avenue Jean Medecin, Nice, France

Filed June 16, 1972, Ser. No. 263,613
Claims priority, application France, July 8, 1971, 7125801
Int. Cl. B21f *43/00*; B23p *13/00*
U.S. Cl. 29—160.6 5 Claims

Ornamental objects such as jewelry are produced, each of which is unique and different from all the others, by compressing a mass of old jewelry and silverware and the like into a block, and then slicing the block into plaques. Either before or after slicing the block, the compressed material may be treated with borax and then heated to 400°–600° C. to impart various colors to the various metals. The compression is in the range 2 to 18 metric tons per square centimeter.

3,778,876

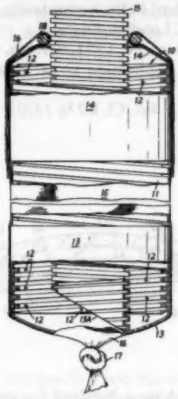
METHOD OF MAKING WELL-POINTS FOR DE-WATERING GROUND

Ronald Noel Allen, and Ernest William Potter, both of London, England, assignors to Henry Sykes Limited, Charlton, London, England

Division of Ser. No. 144,836, May 19, 1971. This application Jan. 3, 1973, Ser. No. 320,805
Claims priority, application Great Britain, June 1, 1970, 26388/70
Int. Cl. B23p *15/16*
U.S. Cl. 29—163.5 F 4 Claims

A disposable wellpoint for dewatering ground comprises a body of spirally-corrugated perforated tubing formed of plastics material and covered by a filter sleeve of nylon fabric, and a suction pipe of spirally corrugated tubing enters the top

end of the body. The body, the sleeve, and the suction pipe can be severed as lengths from supply reels on site, and the assembled wellpoints can be introduced into the ground in a tubular casing provided with water lances.



3,778,877

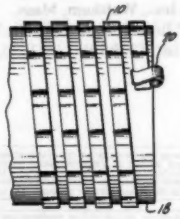
METHOD OF MAKING PISTON RING EXPANDER

James V. Walker, Redondo Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Division of Ser. No. 76,134, Sept. 28, 1970, Pat. No. 3,714,113. This application Sept. 21, 1972, Ser. No. 290,947

Int. Cl. B21f *35/00*; **B23p** *13/00*

U.S. Cl. 29—173 **3 Claims**



A helical piston ring expander for us with plastic or plastic-like piston rings is constructed by crimping a strip of metal, spirally winding the crimped strip around a cylindrical mandrel into a helix, heat treating the resultant assembly and cutting portions therefrom at predetermined points therealong to form the desired expander.

3,778,878

APPARATUS FOR INSERTING RODS INTO COILED TUBES

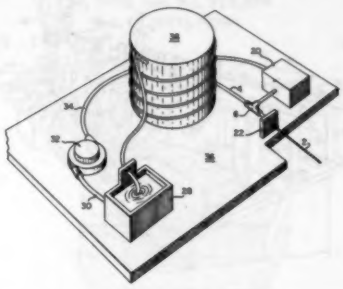
Ahmend El Bindari, Cambridge, Mass., assignor to Clad Metals Corporation, Boston, Mass.

Filed Jan. 10, 1972, Ser. No. 216,499

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 R **14 Claims**

A flexible rod is attached to a spherical piston and inserted into a coiled hollow conduit through a sealed junction at one end of the conduit. The outside diameter of the rod is less than the inside diameter of the conduit and a slight clearance exists between the piston and the conduit. Pressurized fluid is introduced into the conduit at the sealed junction behind the piston. The fluid presses against the piston, thereby exerting force on the rod and the rod is simultaneously pushed from outside the junction. The fluid also acts as a lubricant between the rod and the conduit and the piston and the conduit. Because the fluid is flowing through the conduit it provides dynamic lubrication of the rod. In this manner the rod can be



inserted many angular turns past the total angular distance normally computed using the equation for the "capstan effect" for the case of simply pushing a rod into a coiled hollow conduit. It is thus practical, from a manufacturing standpoint, to insert long lengths of rods into coiled tubular members.

3,778,879

METHOD AND DEVICE FOR MANUFACTURING A FLAT CABLE AS WELL AS A CABLE ACQUIRED BY MEANS OF THE SAME

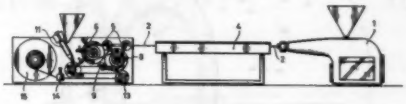
Leendert Den Ottolander, Rotterdam, Netherlands, assignor to Walpro Plastics N.V., Nijverheidsweg, Hendrik Ido Ambacht, Netherlands

Filed Aug. 1, 1972, Ser. No. 277,009

Claims priority, application Netherlands, Aug. 13, 1971, 7111170

Int. Cl. H01b *13/00*

U.S. Cl. 29—203 C **2 Claims**



A method for manufacturing a flat cable comprising a grooved tape-like body which is guided along a curved surface such that the grooves are lying on the convex side; a conductor is feeded into each groove under some tension and a strip is applied to the grooved face of the tape.

3,778,880

TOOLING POSITIONING DRIVE SYSTEM FOR AUTOMATIC GAGING AND ASSEMBLY MACHINES

Robert E. Esch, Bloomfield Hills, Mich.; William C. Arnold, Dayton, Ohio; Billy K. Skelton, Dayton, Ohio; Michael D. Saxon, Dayton, Ohio; Jerome A. Murphy, Kettering, Ohio, and Roy S. Saques, Englewood, Ohio, assignors to The Bendix Corporation, Southfield, Mich.

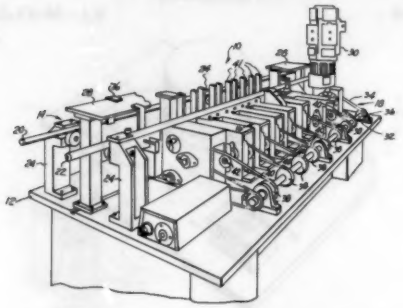
Filed Sept. 25, 1972, Ser. No. 292,049

Int. Cl. B23p *19/04*, *19/00*

U.S. Cl. 29—208 C **10 Claims**

A drive system for positioning the tooling of linear transfer automatic gaging and/or assembly machines is disclosed which allows the use of standardized modular components for greatly varying machine applications. The drive system includes a power take-off shaft extending along the machine workpiece transfer system and a series of motion mechanisms located at each tooling station, each motion mechanism in-

cluding a rotary cam driven by a flexible drive element in turn driven by the power take-off shaft, a pivoted lever oscillated by the rotary cam, and a tooling mounting slide translated by oscillation of the pivoted lever. Variations in the position of



the tooling relative the power take-off shaft and the transfer system required for various applications are taken up in the flexible drive element to allow the use of standardized cam-lever-slide modules for the varying machine configurations.

3,778,881

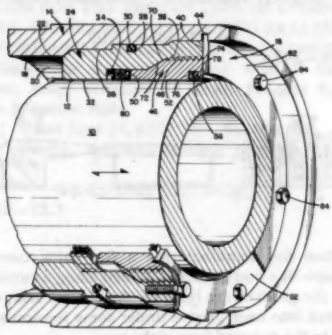
CYLINDER END ASSEMBLY

Peter A. Knapp, 17 Albany St., Wollaston, Mass.

Filed Nov. 29, 1972, Ser. No. 310,479

Int. Cl. B23p *7/00*; **F16j** *15/18*

U.S. Cl. 29—401 **10 Claims**



A method of repairing or reworking a cylinder end assembly used in a prior art hydraulic or pneumatic cylinder and the resulting improved cylinder end assembly. A conventional Leach 2R–1006 type cylinder which has been damaged (or which has been deemed ready for replacement) is repaired or reworked primarily by modifying its packing gland. The packing gland flange is cut off, the wiper ring groove is relocated, the wire, screws and nuts which were used to prevent packing gland rotation are discarded, the snap ring is discarded, and the V-packing is dug out and discarded.

Then, a new O-ring and fluid sealing ring are installed on the top head, a new wiper ring is installed on the packing gland, and the packing gland is screwed tightly into the top head. This assembly is then slidably inserted into the cylinder weldment and new curved locking segments are inserted into the cylinder weldment circular groove and bolted against the outer faces of the top head-packing gland assembly to prevent longitudinal movement thereof.

3,778,882

METHOD OF MAKING HANDRAILS

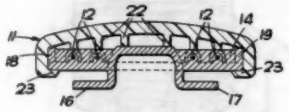
James Brisbane Cameron; Bernard Piet Walton-Knight, both of London, England; Otto Floris Bartoo, and Joannes Cornelis Molijn, both of Delft, Netherlands, assignors to BTR Industries Limited, London, England

Filed June 10, 1971, Ser. No. 151,712

Claims priority, application Great Britain, June 12, 1970, 28,634/70

Int. Cl. B23p *11/02*

U.S. Cl. 29—450 **7 Claims**



A method of making a handrail for an escalator or a passenger conveyor, which includes the steps of forming a body by moulding successive lengths of rigid plastics material onto a continuous reinforcing material, and then applying a continuous cover layer over the body. The cover layer is flexible. The moulded lengths may be spaced apart or abut the next adjacent length. Flanges may be formed on the underside of the body to define opposed slots parallel to the body, and which slots are engageable by guide means to support the handrail when in use.

3,778,883

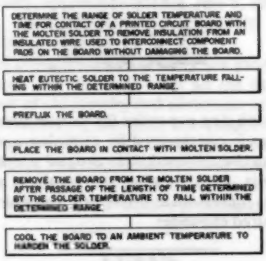
PROCESS OF MASS SOLDERING ELECTRICAL COMPONENTS TO CIRCUIT BOARDS HAVING RUNS FORMED FROM INSULATED MAGNET WIRE

Karl R. Bethsold, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed June 2, 1972, Ser. No. 260,337

Int. Cl. B23k *31/02*, *35/36*

U.S. Cl. 29—495 **3 Claims**


DETERMINE THE RANGE OF SOLDER TEMPERATURE AND TIME FOR CONTACT OF A PRINTED CIRCUIT BOARD WITH THE MOLTEN SOLDER TO REMOVE INSULATION FROM AN INSULATED WIRE USED TO INTERCONNECT COMPONENT PADS ON THE BOARD WITHOUT DAMAGING THE BOARD.
HEAT EUTECTIC SOLDER TO THE TEMPERATURE FALLING WITHIN THE DETERMINED RANGE.
PREFLUX THE BOARD.
PLACE THE BOARD IN CONTACT WITH MOLTEN SOLDER.
REMOVE THE BOARD FROM THE MOLTEN SOLDER AFTER PASSAGE OF THE LENGTH OF TIME DETERMINED BY THE SOLDER TEMPERATURE TO FALL WITHIN THE DETERMINED RANGE.
COOL THE BOARD TO AN AMBIENT TEMPERATURE TO HARDEN THE SOLDER.

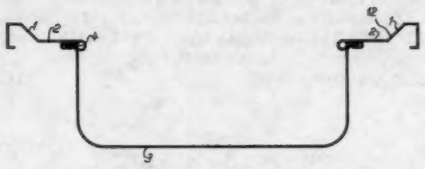
The soldering process uses eutectic solder raised to a higher than normal temperature for printed circuit board soldering. The higher temperature is used to remove the insulation from the wire to allow the solder to electrically fasten the wire and the components to the circuit boards. The process immerses the circuit board into the molten solder for a specific dwell time according to the temperature of the solder, the circuit board material and the insulation to be removed from the wire. The dwell time and solder bath temperature must fall within a determined operating range to remove the insulation from the wire and perform the soldering while preventing damage to the board.

3,778,884

METHOD OF MANUFACTURING A SINK COMPRISING A BENCH AND A BASIN

Pierre Yves Bene, 30 Route de chazieres 69, Lyon, France

Filed May 1, 1972, Ser. No. 249,372
Int. Cl. B21d 39/00; B23p 11/00
U.S. Cl. 29—512 1 Claim



According to the disclosure a sink formed of sheet metal or including sheet metal in its manufacture comprises a connecting flange joining a bench and a basin. The method of manufacturing the sink includes the steps of fitting the flange onto the bench and then subsequently onto the basin.

3,778,885

METHOD FOR THE MANUFACTURE OF PLUTONIUM-CONTAINING NUCLEAR FUEL RODS

Wolfgang Stoll, Hanau, Germany, assignor to ALKEM GmbH, Hanau, Germany

Filed July 24, 1972, Ser. No. 274,654
Claims priority, application Germany, July 24, 1971, P 21 37 133.5
Int. Cl. B23p 17/00, 25/00
U.S. Cl. 29—527.2 12 Claims

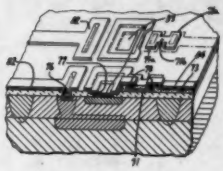
Nuclear fuel rods are manufactured by coating the inner wall of the tubular casing of the fuel rod with a layer of plutonium-containing matrix so that the plutonium is disposed only in the cylindrical outer zone of the uranium-containing nuclear fuel charge. This is done by preparing a suspension of plutonium-containing particles in a lacquer which can be decomposed into carbon by a heat treatment, passing the suspension through the tubular casing and heating the dried coating of the suspension in a protective inert atmosphere until the lacquer is cabonized.

3,778,886

SEMICONDUCTOR STRUCTURE WITH FUSIBLE LINK AND METHOD

Michael A. Shields, Sunnyvale, and Robert W. Andrews, San Jose, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 33,802, May 1, 1970. This application Jan. 20, 1972, Ser. No. 219,579
Int. Cl. B01j 17/00
U.S. Cl. 29—577 4 Claims



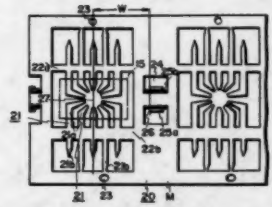
A semiconductor structure with a fusible link having a semiconductor body with semiconductor devices formed in the semiconductor body and a lead structure carried by the body making contact with the devices formed in the body to form an array in which the lead structure includes at least one fusible link which lies in a single plane and which has a relatively precise thickness and length throughout.

3,778,887

ELECTRONIC DEVICES AND METHOD FOR MANUFACTURING THE SAME

Jinichiro Suzuki; Kenzi Takezawa, and Takanori Takeda, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1971, Ser. No. 208,092
Claims priority, application Japan, Dec. 23, 1970, 45/115658; Jan. 22, 1971, 46/1580
Int. Cl. B01j 17/00
U.S. Cl. 29—588 7 Claims



Manufacturing of power semiconductor devices utilizing a metal strip and a lead frame. The metal strip has a plurality of portions on which semiconductor chips are mounted, and fastening means constituted by indents at the longer sides of the strip and metal pieces protruding along the indents. The lead frame has a plurality of lead units and tab portions corresponding to the indents. The lead frame is locked over the metal strip by inserting the tab portions into the corresponding indents and bending the metal pieces toward the tab portions. After encapsulating the combinations of the lead units and the portions having the chips thereon with plastic material, respectively, the metal strip and the lead frame are cut along the portions of the tab-metal piece combinations, thereby to obtain a plurality of individual power semiconductor devices.

3,778,888

METHOD OF APPLYING A FIELD CONTROL DEVICE TO AN INSULATED CONDUCTOR OF A CABLE AND AN APPARATUS FOR CARRYING OUT THE METHOD

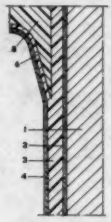
Jan C. Clason, Engelo, Netherlands, assignor to N. V. Fabriek Van Electrische Apparaten Voorheen F. Hazemeijer & Co., Hengelo, Netherlands

Filed May 3, 1971, Ser. No. 139,803

Claims priority, application Netherlands, May 1, 1970, 7006483

Int. Cl. H01s *4/00*

U.S. Cl. 29—592 3 Claims



Method of applying a field control device to an insulated conductor of a cable, the insulation of which is surrounded by an adhering layer of semi-conductive material including the steps of cutting an annular groove in said insulation in an axial direction and bending the sleeve formed thereby outwardly of said cable.

An apparatus for cutting an annular groove in the insulation of the cable is also provided.

3,778,889

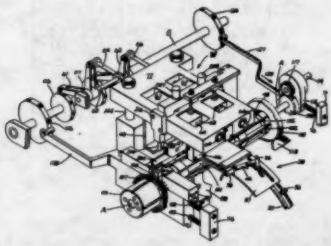
APPARATUS AND METHOD FOR PERFORMING MANUFACTURING OPERATIONS ON AN ARTICLE OF MANUFACTURE

Lowell M. Mason, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 144,426, May 19, 1971, Pat. No. 3,702,498. This application Aug. 30, 1972, Ser. No. 284,905

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 8 Claims



Apparatus and method for performing manufacturing operations on an article of manufacture, e.g., for producing and placing formed pieces of insulation into nonradially aligned or otherwise irregularly oriented slots of a magnetic core. Preferred form of apparatus includes compensating means for selectively positioning an article support relative to a datum plane of the apparatus. This means, in one form, includes a first drive member that tends to drive a driven member through a fixed angular increment. The driven member is movable about a preselected movable reference point which in turn is movable differential amounts relative to the pitch or drive line of the first drive member so that the driven member is selectively movable through a preselected net differential increment of travel relative to a fixed increment of travel of the first drive member.

3,778,890

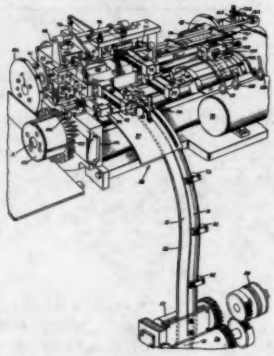
APPARATUS AND METHOD FOR PRECISELY FORMING AND PLACING INSULATION IN THE SLOTS OF MAGNETIC CORES

Leo M. Schlaudroff, Fort Wayne, Ind., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

Division of Ser. No. 144,425, May 18, 1971, Pat. No. 3,703,854. This application Sept. 7, 1972, Ser. No. 286,934

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 10 Claims



Apparatus and method for accurately sizing pieces of insulation and for placing formed pieces of insulation into slots of a magnetic core. Dielectric strip material is fed to a sizing and forming station by a strip accumulating and urging device, and dielectric material pieces of preselected sizes are precisely formed. The core is precisely aligned relative to the forming member so that the insulation pieces may be inserted into a core slot which the insulation piece has been particularly formed to fit. Preferred formed of apparatus includes constant force mechanisms for accurately returnign strip material length determining, severing, and forming mechanisms to respective dwell positions; positive acting cams, e.g., conjugate and face cams, in selected mechanism drive trains; and positively controlled compensating means for selectively positioning a core support relative to a datum plane of the apparatus. Means in the form of relatively movable pressure bars are urged, by constant force mechanisms, toward forming devices having different sizes and shapes to form insulators thereagainst. In another embodiment, a modified guide ring for forming and inserting devices is provided.

3,778,891

METHOD OF SECURING DYNAMOELECTRIC MACHINE COILS BY SLOT WEDGE AND FILLER LOCKING MEANS

Richard L. Amasino, Trafford, and Paul S. Johrde, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

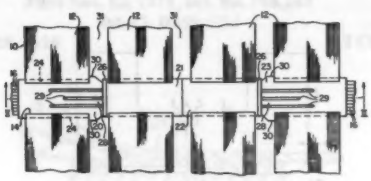
Division of Ser. No. 137,466, April 26, 1971. This application Oct. 30, 1972, Ser. No. 302,328

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 6 Claims

For retention of a coil in dynamoelectric machine core slots, a slot wedge is provided with a compressible end that is normally oversized in relation to the slot width. The wedge is compressed when driven through the slot. The oversized portion then expands when it reaches the first vent duct and locks

the wedge in the slot. Another feature is to use a flexible insulating tape between the coil and the slot filler strips with ends extending from the slot so that they can be wrapped around



the ends of the filler strips and be secured by a locking type wedge, which may be as described above, at each end of the stack.

3,778,892

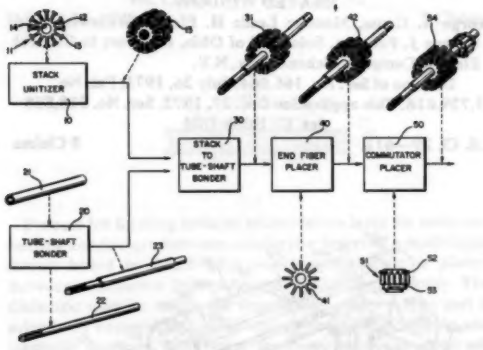
METHOD OF PRODUCING DOUBLE-INSULATED ARMATURE SUB-ASSEMBLIES

Richard J. Ostroski, Glen Arm, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 4, 1972, Ser. No. 278,053

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 **7 Claims**



An improved method of producing armature sub-assemblies for electric motors is described. The completed sub-assembly includes a shaft, a stack of laminations and a commutator and an insulating tube disposed between at least the shaft and the stack of laminations. The method includes the steps of applying adhesive material to the various parts to cause bonding thereof.

3,778,893

METHOD OF FABRICATING A COHERENT SUPERCONDUCTING OSCILLATOR

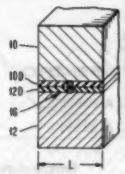
William A. Thompson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 21,640, March 23, 1970, Pat. No. 3,628,184. This application June 10, 1971, Ser. No. 151,885

Int. Cl. H01v *11/00*; H01l *7/18*

U.S. Cl. 29—599 **13 Claims**

A superconducting oscillator for generating millimeter and infrared radiation and a method for fabricating these oscillators. A Josephson junction (weak link or tunneling juntion) is located between electrodes which furnish DC current to the junction and also define a resonant cavity for electromagnetic radiation from the junction. Thus, an internal cavity is provided and increased power outputs over a wide frequency range are possible. The oscillator is produced by spark erosion between the electrodes at liquid helium temperatures, which forms a very small junction and cavity resonator.



3,778,894

PROCESS FOR MAKING A V GA SUPERCONDUCTIVE COMPOSITE STRUCTURE

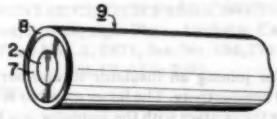
Akiro Kono, Tokyo, and Yoshiharu Nozawa, Yokohama, both of Japan, assignors to Ulvac Corporation, Kanagawa-ken and The Research Development Corporation of Japan, Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 205,057

Claims priority, application Japan, Dec. 15, 1970, 45/111127

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **9 Claims**



A process for making a V_3Ga superconductive composite structure wherein a composite structure is formed by sheathing one or more elements, of vanadium metal or vanadium base alloy containing one or more of Ti, Zr or Hf in an amount of less than 10 atom %, with a pure metal selected from the group consisting of Cu, Au and Ag, said composite structure is subjected to a plastic working, the resulting composite structure is coated with gallium, and said gallium-coated composite structure is heat treated to diffuse the gallium into said coated layers and simultaneously to produce V_3Ga in a boundary zone.

3,778,895

METHOD OF FABRICATING AN ALUMINUM CLAD MULTIPLEX SUPERCONDUCTOR

Harehiko Nomura, and Susumu Shimamoto, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Division of Ser. No. 212,199, Dec. 27, 1971, Pat. No. 3,714,371. This application Oct. 24, 1972, Ser. No. 300,345

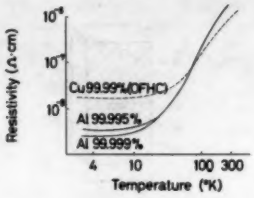
Claims priority, application Japan, Dec. 28, 1970, 45/120120

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **4 Claims**

An aluminum clad multiplex superconductor comprises an aluminum alloy cladding and a multiplex superconductor inserted into the cladding and is constructed with a plurality of unit superconductors twisted or braided with each other, each of which unit superconductors is constructed with a strand of a plurality of superconductive wires, an intermediate alu-

minum layer and a relatively hard aluminum alloy layer surrounding the intermediate layer. The intermediate aluminum



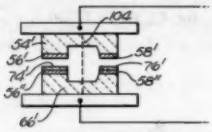
layer serves to prevent the flowing phenomenon during the withdrawing of the unit superconductor.

3,778,896

BONDING AN INSULATOR TO AN INORGANIC MEMBER

John F. Bagby, Glendora, Calif., assignor to Bell & Howell Company, Pasadena, Calif.

Filed May 5, 1972, Ser. No. 250,544
Int. Cl. G11b 5/42; H01f 7/06
U.S. Cl. 29—603 **26 Claims**



A method for joining an insulator to another member of poor electrical conductivity. The latter member is formed with a metal surface for contact with the insulator in a Mallory type bonding process wherein a potential is applied across the contact surfaces while heating below a molten state. In particular embodiments, the poor electrical conductor is a ferrite sputtered with metal to form the bonding surface and the method is used to manufacture a ferrite magnetic head having pole tips separated by a gap filled with a glass insulator. In other embodiments, a very thin layer of insulator is made more suitable for Mallory type bonding by RF sputtering onto a substrate from a target which is cooled by disposing a heat conductor between the target and the RF electrode. Mallory bonding of the thin insulator layer is enhanced by a reversal of polarity of the applied potential following a decrease in electric current flow.

3,778,897

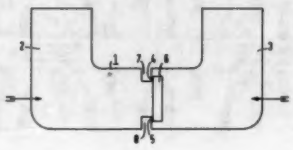
METHOD OF PRODUCING MAGNETIC CORE PARTS

Erwin Bock, and Oskar Theml, both of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 29, 1971, Ser. No. 202,881
Claims priority, application Germany, Dec. 1, 1970, P 20 59 064.1
Int. Cl. H01f 7/06
U.S. Cl. 29—609 **3 Claims**

In a method of producing at least two separate magnetic core parts that are each made up of stacked laminations, the following steps are provided: the step of stamping sections out of an individual metal sheet to form connecting struts located between and extending transversely to lamination sections of the sheet, and the step of displacing the lamination sections toward each other in a longitudinal direction of the lamination sections for shearing the struts so as to separate the lamination sections from one another.

Also, a blank for performing steps in a method of producing at least two separate magnetic core parts that are each made up of stacked laminations. The blank includes a sheet of metal having a longitudinal axis and having at least one opening hav-



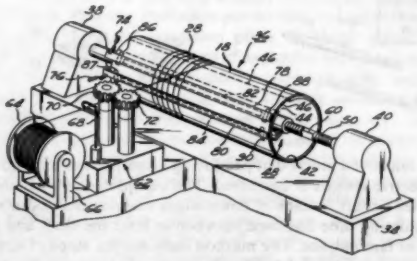
ing a longitudinal axis, the opening being located in the sheet so that the axes are mutually perpendicular. The sheet also has two notches extending inwardly transverse to the axis of the sheet from respective sides thereof and the opening is adjacent the notches to form struts therebetween.

3,778,898

METHOD OF MAKING A LAMINATED ELECTRICALLY HEATED WINDOW

George A. Gruss, Mentor; Leslie H. Pfeiler, Willowick, and George J. Polanka, Solon, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 166,064, July 26, 1971, Pat. No. 3,729,616. This application Dec. 27, 1972, Ser. No. 318,868
Int. Cl. H05b 3/06
U.S. Cl. 29—611 **5 Claims**



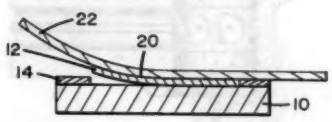
A method of making a laminated safety glass window having a clear polymer inner layer which includes a pattern of wrinkled resistance wires oriented in non-parallel random fashion so as to reduce glare from the wires when the window is used as a windshield. The individual resistance wires are partially embedded in the polymer sheet by a technique utilizing shrinkage of a thermoplastic polymer from its original dimensions when heated to an elevated temperature together with having the individual wires change configuration when relaxed from tension forces on the wire when first assembled with the polymer sheet. The method includes steps of forming the wire-incorporated polymer sheet member by automatically applying prestressed resistance wire to a thermoplastic sheet followed by heating the assembly under proper conditions to form the composite member.

3,778,899

MOUNTING PREFORMED CIRCUITS ON FLEXIBLE DIELECTRIC SUBSTRATES

E. Curtis Johnson, Mahtomedi, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed Nov. 12, 1971, Ser. No. 198,147
Int. Cl. H05k 3/20
U.S. Cl. 29—625 7 Claims



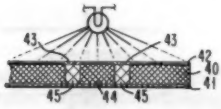
A process for preparing preformed circuits for mounting on a flexible dielectric substrate in which the preformed circuit is subject to a strong alkaline bath so as to add oxygen atoms to the surface of the circuit to increase the incidence of hydrogen bonds between the circuits and the dielectric substrate.

3,778,900

METHOD FOR FORMING INTERCONNECTIONS BETWEEN CIRCUIT LAYERS OF A MULTI-LAYER PACKAGE

Frank W. Haining, Binghamton, and Loren J. Puterbaugh, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,646
Int. Cl. H01r 43/00; C23f 1/02
U.S. Cl. 29—628 5 Claims



Process for forming holes in an insulation layer for interconnecting conductors between conductive layers of a multi-layer circuit board in which photosensitive dielectric is placed between conductive foils to form a multi-layer assembly. The dielectric may be either the negative or positive type and is selectively exposed to radiant energy to produce soluble and insoluble portions. If negative, exposure occurs prior to adding both foils; if positive, exposure is after both foils are in place. Holes are formed in one or both foils corresponding to the location of the soluble portions of the dielectric or to the portions to be solubilized by exposure. Development then removes the soluble dielectric resulting in well formed holes for conductors.

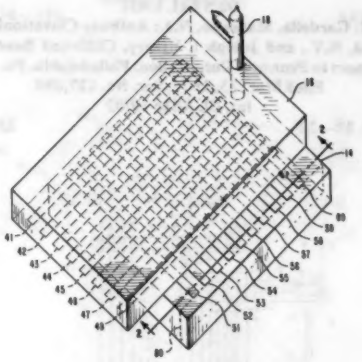
3,778,901

METHOD OF PROTECTING ELECTRICAL CONDUCTOR TERMINATIONS DURING GAS PANEL FABRICATION

Peter R. Wagner, Lake Katrine, and Donald M. Wilson, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,150
Int. Cl. H05k 3/28
U.S. Cl. 29—625 4 Claims

Thin parallel electrical conductors are protected from attack during elevated temperature operations in gas panel fabrications by a method which involves depositing the parallel electrical conductors on a pair of glass plates with the parallel conductors terminating a given distance from the edges of each glass plate whereby each such plate extends beyond the ends of the parallel conductors, and covering the parallel conductors with a protective glass coating which covers completely the top, sides, and ends of each parallel conductor. Since the ends of the parallel conductors are covered completely, they are protected from attack and destruction during subsequent firing operations in the fabrication of a gas panel. After panel fabrication is completed one



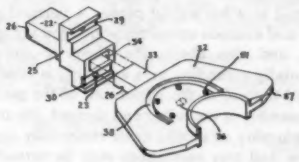
end of each glass plate may be cut off flush with the ends of the parallel conductors if desired. The protective glass coating is removed around the end or terminal regions of the parallel conductors whereby the exposed portions of the conductors may serve as electrical contacts.

3,778,902

DENTAL CLUTCH FABRICATION

Niles F. Guichet, 320 Olympia Place, Anaheim, Calif.

Filed Nov. 1, 1971, Ser. No. 194,174
Int. Cl. A61c 9/00
U.S. Cl. 32—20 17 Claims



An improvement in the dental clutch fabrication means shown in U.S. Pat. No. 3,508,333 is described herein. The improvement permits use of but a single set of clutch support forks for endentulous and dentulous patients and provides preformed bearing pin guide means for greater precision of operation. The dental clutches, which are intaglio castings of the teeth, are formed on support forks that are secured in precise relationship to each other by jig means which has a separation plate to separate the clutches as they are formed. The clutches are preferably cast in the patient's mouth, directly on the teeth. The improved support forks described herein are combined with plates having bearing pin guide surfaces which have a preformed contour so that no difficulties are encountered in the forming of this guide surface. Two types of bearing surfaces are provided; a substantially flat planar surface for endentulous patients and a dished surface, preferably having a particular shape to encourage purely lateral and protrusive movements, for dentulous patients. The plates have means to index their position to the fork when casting the clutches and can be attached or unattached to the forks. The plates are preferably supported from the forks with attachment means which permits their removal so that they

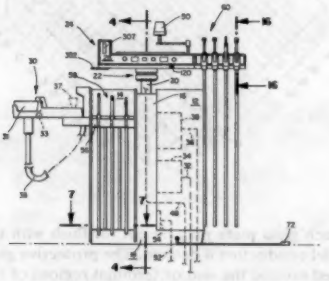
can be supplied in pairs and the undesired bearing surface can be removed from one of the forks which can then be used for forming the mandibular clutch, while the fork bearing the desired bearing surface is used for the maxillary clutch.

3,778,903

DENTAL UNIT

John M. Gardella, Matawan, N.J.; Anthony Ciavattoni, Staten Island, N.Y., and Joseph I. Ujvary, Cliffwood Beach, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 23, 1971, Ser. No. 127,098
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **23 Claims**



A dental unit includes an inverted generally T-shaped frame with a supply section located on one side of the upright portion of the frame, and an evacuation section on the other side thereof; the evacuation section includes an evacuation instrument removably supported on a front side thereof, this section being rotatably mounted to the horizontal portion of the frame so that the front side thereof may be rotated to face in any one of an infinite number of positions located within a 180° arc as measured in a horizontal plane. A vertical post is supported within and extends upwardly above the upright portion of the frame, and also above the above mentioned sections. A horizontally extending arm assembly is rotatably mounted at one end thereof to the upper end of the post, and supports a tray assembly at the other end thereof, the tray assembly having a plurality of dental drills removably supported thereon; the arm and tray assemblies may be retracted to a position over the above mentioned sections. The unit includes an outlet into which a prophylaxis unit plug can be inserted so that a single foot control unit can be used for operating both the dental drills and the prophylaxis unit. Upon removing a drill from its associated hanger the supply system is programmed to actuate the selected drill upon actuation of the foot control unit, unless upon removal of the drill, its associated hanger is latched in its lowermost position.

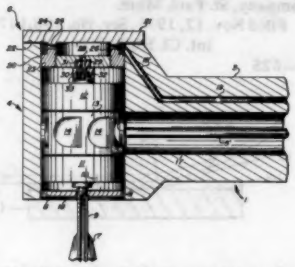
3,778,904

COOLING SYSTEM FOR A DENTAL HANDPIECE

Chris R. Melde, 7755 Foothill Dr., Scottsdale, Ariz.

Filed July 17, 1972, Ser. No. 272,202
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **10 Claims**

A dental handpiece including a handle, a shank and a head is disclosed for conveying a cooling stream of air to a workpiece. The stream of air is conveyed through a passageway in the dental handpiece to a cap in the head. The cap includes a collection chamber for receiving and distributing the stream of air. The air within the collection chamber is forced out through an axially disposed aperture within the cap and internal to the head. The end of a hollow burr, the burr being rotatably mounted within the head, communicates with the collection chamber via an apertured resilient coupling. Thereby, the air forced out of the collection chamber, flows through the coupling and into the hollow burr. Thence, the air



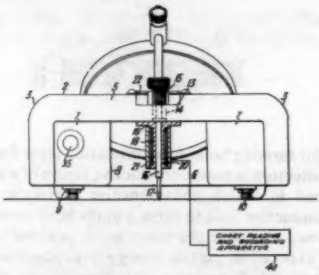
flows through the burr to the working portion thereof and cools the working portion as well as the workpiece in proximity to the working portion.

3,778,905

SCRIBING INSTRUMENTS

Alan Jebb, Bromley, and Colin Bowden Besant, Marlow Bottom, both of England, assignors to D-Mac Limited, Glasgow, Great Britain

Filed Mar. 9, 1971, Ser. No. 122,459
Claims priority, application Great Britain, Mar. 10, 1970, 11,314/70
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 R **4 Claims**



A scribing instrument for use on a scribing surface has a body portion on which is mounted a stylus and the body is supported on the scribing surface by at least one variable support. Downward pressure applied to the body causes the variable support to contract such that the instrument takes up a first position in which the stylus contacts the surface and the instrument can then be moved across the surface in said first position for scribing. Release of the pressure causes the variable support to expand such that the instrument takes up a second position in which the stylus does not contact the surface, and the instrument can be moved in said second position across the surface without scribing it.

3,778,906

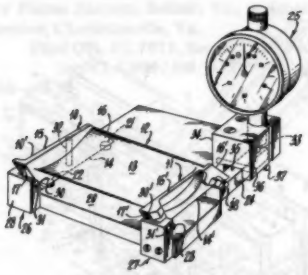
BUTTRESS TWIST GAGE

Edward C. Palmenberg, Nanuet, N.Y., assignor to Chromalloy American Corporation, Orangeburg, N.Y.

Division of Ser. No. 25,506, April 3, 1970. This application Dec. 29, 1971, Ser. No. 213,577
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 P **5 Claims**

The invention contemplates a vane-twist measuring or gaging instrument in which the overall twist of the vane is as-

sumed to be indicated by the angular relation between a reference alignment, taken on one buttress surface, and a measured-offset alignment, taken on the corresponding surface of the other buttress for the same vane. Basically, a reference plane is established for the reference surface of the first abutment, as by using two fixed and precisely positioned spaced point-contact elements, and a gage carried by the instrument near the other buttress senses the inclination of the other buttress (with respect to the reference plane) when the



other buttress is applied against a single, or third, fixed point of support on the instrument. In one form, the third support point is established by an elongated bar, with provision for central pivotal support, so that its angular orientation about the pivot may reflect contact with, and therefore slope of, the other vane buttress; in another form, the third support point is a fixed abutment near one end of the other buttress, and a probe responds to a given location near the other end of the buttress when the vane is applied to the three fixed support contacts.

3,778,907

DRYING OF MOIST MATERIAL

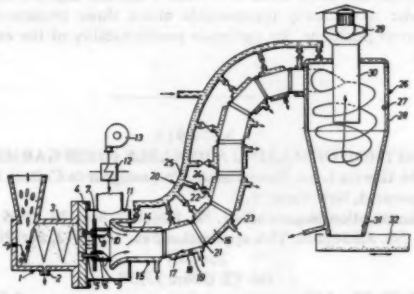
Egon Kuntz; Paul Esser; Edgar Muschelknautz, all of Leverkusen, and Heinz Grone, Marl, all of Germany, assignors to Bayer Aktiengesellshaft, Leverkusen, Germany

Filed May 24, 1971, Ser. No. 146,374

Claims priority, application Germany, June 11, 1970, P 20 28 742.7

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 R **10 Claims**



Drying of moist material, e.g., rubber crumbs, is effected using a screw machine which disperses the particles in an air stream. The air stream and particles pass through a conveying pipe, in which further drying occurs, and then into a separator from which the dried particles fall onto a conveyor. The conveying pipe and the separator are cooled. The cooling prevents accumulation of the particles on the walls of the equipment.

3,778,908

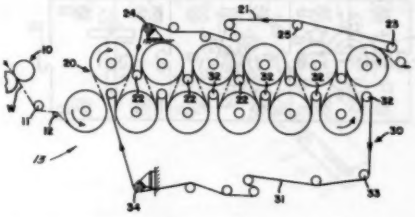
PAPER MACHINE DRYING APPARATUS

Willard C. Notbohm, Watertown, N.Y., assignor to The Black Dawson Company, Hamilton, Ohio

Continuation of Ser. No. 833,407, June 16, 1969, abandoned. This application July 27, 1971, Ser. No. 166,400

Int. Cl. F26g *11/00*

U.S. Cl. 34—116 **13 Claims**



At least one dryer felt roll in a paper machine dryer section is of the variable crown type so that the pressure with which the roll bears against the dryer felt may be varied along the length of the roll. In this way, nonuniformities in felt tension caused by the deflection of other felt rolls in the dryer section may be compensated for, and more uniform drying of a paper web in the cross machine direction obtained as it is pressed against the dryer drums by the dryer felt.

3,778,909

APPARATUS FOR THE CONTINUOUS HEAT TREATMENT OF RUNING YARNS

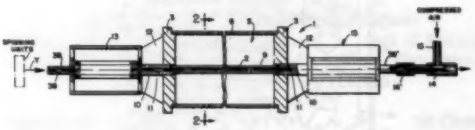
Karl Ostertag, Elsenfeld; Heinrich Nilgens, Erlenbach, and Herbert Scheiber, Kleinwallstadt, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Apr. 21, 1972, Ser. No. 246,326

Claims priority, application Germany, May 4, 1971, P 21 21 843.9

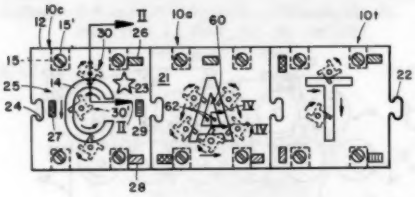
Int. Cl. F26b *25/00*

U.S. Cl. 34—155 **18 Claims**



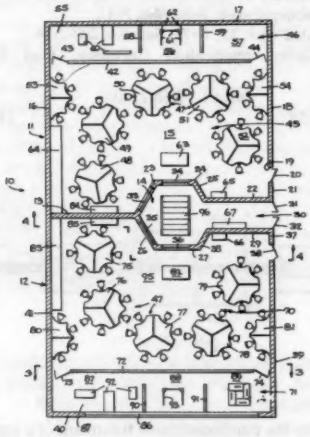
Apparatus for the continuous heat treatment of a number of running yarns, tows, threads, strands or the like with saturated steam requiring a corresponding number of straight pressure pipes as individual heating chambers with feed inlet means for the steam and including a corresponding number of pressure locking means having a variable throttle cross-section at each of the inlet and outlet ends of the heating chambers so that the heating chambers are individually supplied with the steam and the yarns can be individually reintroduced in the event of breakage. The pressure locking means is preferably constructed with a special labyrinth seal.

3,778,910
WRITING AID
Lenore R. Smalligan, 1845 Orville S.E., Grand Rapids, Mich.
Filed June 22, 1972, Ser. No. 265,290
Int. Cl. G09b *11/04*
U.S. Cl. 35—37 16 Claims



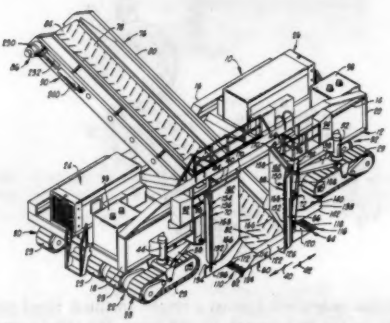
A writing aid includes a plurality of stencil modules, each including a template board having a guide track in the pattern of a cursive or script letter or number. The modules are positioned over a writing sheet and further include unidirectional motion limiting devices extending into the guide track at locations which permit motion of a writing instrument in only the proper direction.

3,778,911
CLASSROOM FOR PAIRED LEARNING
Myron Woolman, 4828 16th St., N.W., New York, N.Y.
Continuation of Ser. No. 41,258, May 28, 1970, abandoned. This application June 1, 1972, Ser. No. 258,811
Int. Cl. E04h *3/08*
U.S. Cl. 35—60 30 Claims



A classroom is presented in which a plurality of learners may engage in paired learning and psycho-motor activities in a manner to increase the learning effectiveness of each of these two types of learning programs. A first area is provided for containing paired learning devices and a second area is provided for containing simulator equipment for psycho-motor activities.

3,778,912
SIDE BANK EXCAVATOR
George W. Swisher, Jr., and Autho Hale, both of Oklahoma City, Okla., assignors to CMI Corporation, Oklahoma City, Okla.
Filed May 12, 1971, Ser. No. 142,725
Int. Cl. E02f *5/00*
U.S. Cl. 37—110 14 Claims



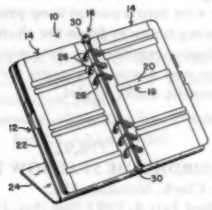
An improved excavator for excavatingly removing earth from a hill or a bank-like area, having a horizontal earth removal assembly and a vertical earth removal assembly, each having a portion constructed to excavatingly engage a portion of earth in a forward moving direction of the excavator and another portion to excavatingly engage a portion of earth in a rearward moving direction of the excavator. The excavator includes, a conveyor constructed and positioned to remove the excavated earth to a remote, predetermined position, in a forward and a rearward moving direction of the excavator, and a conveyor control having one portion to automatically adjust the tension of the conveyor, and another portion to maintain the conveyor in a predetermined alignment position. The excavator is drivingly supported by a plurality of track members, each track member being connected to the support frame of the excavator via a track support member and a hydraulic cylinder, such that the support frame is vertically positionable in an upwardly and a downwardly direction. The hydraulic cylinders are hydraulically interconnected and controlled via a grade and slope control in such a manner that the support frame is vertically positionable about three predetermined control positions, for optimum positionability of the excavator.

3,778,913
METHOD OF MAKING A DURABLE PRESS GARMENT
John Garvin Lord, Swarthmore, Pa., assignor to Cotton, Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 826,277, May 20, 1969, Pat. No. 3,656,246. This application Feb. 16, 1972, Ser. No. 226,987
Int. Cl. D06m *13/54*
U.S. Cl. 38—144 8 Claims

A durable press garment is made by cutting and assembling the garment from a cellulose fiber-containing fabric, pressing the garment to impart a suitable crease thereto, applying a liquid impregnant containing all constituents for giving the garment durable press characteristics upon subsequent heating, said application of liquid impregnant being performed without significantly disturbing the pressed condition of the garment, then drying the impregnated garment under normal atmospheric conditions, re-pressing the garment without cur-

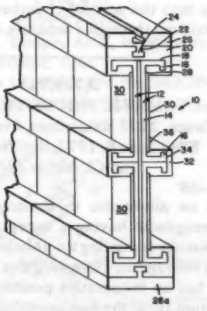
ing the impregnant to eliminate any wrinkles which may have formed therein and to touch up the crease, and heating of the garment at about 200° – 350°F. to cure the creaseproofing agent.

3,778,914
VISIBLE INDEX SYSTEMS
Alexander Patton Janssen, Bellair, Va., assignor to Datastrip Corporation, Charlottesville, Va.
Filed Oct. 13, 1971, Ser. No. 188,743
Int. Cl. G09f *1/00*; B32b *3/10*
U.S. Cl. 40—64 R **3 Claims**



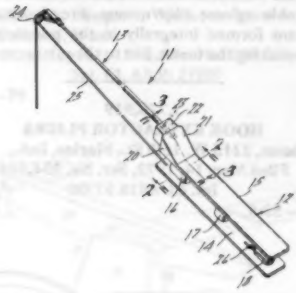
A visible index system including a panel, inserts removably attachable to the panel, and labels on which information can be typed or otherwise imprinted, provision being made for attaching the labels to the inserts.

3,778,915
FRAME ASSEMBLY KIT
George Freeman, and Patricia V. Freeman, both of 2051-43rd Ave., San Francisco, Calif.
Filed June 23, 1972, Ser. No. 265,870
Int. Cl. G09f *07/08*
U.S. Cl. 40—125 R **11 Claims**



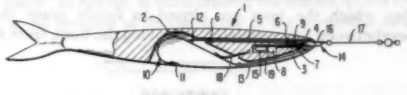
A frame assembly kit that can be readily assembled and reassembled to provide for changes in shape and size of display area required. Provisions are included for utilizing indicia emitting light of fluorescent wave length.

3,778,916
FISHING ROD
Maynard Wallace, 38172 Seaway Dr., Mt. Clemens, Mich.
Filed Oct. 10, 1972, Ser. No. 295,894
Int. Cl. A01k *87/00*
U.S. Cl. 43—18 R **4 Claims**



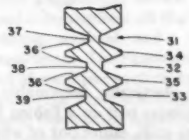
A short fishing rod especially useful for ice or chug fishing, trolling, or children's use. the rod comprises an elongated handle portion and a rod portion mounted in a socket thereof. One end of the line is secured to the handle, which has a longitudinal groove around it for storing the line.

3,778,917
DECOY, ESPECIALLY TROLLING HOOK
Emil Peippo, Harjavalta, Finland
Filed May 18, 1972, Ser. No. 254,378
Int. Cl. A01k *85/02*
U.S. Cl. 43—35 **8 Claims**



A trolling decoy or lure comprising a body with a longitudinal recess open to one side of the body to receive a hook therein. The hook is held retracted in the recess by a setting pin releasably engaging a loop on the hook against the bias of a spring mounted on the body but is ejected outwardly from the recess by the spring when the setting pin is released from the hook loop upon the strike of a fish.

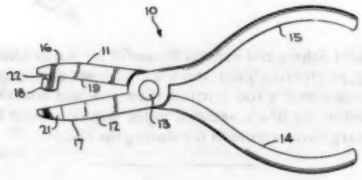
3,778,918
DOWNRIGGER RELEASE FOR FISHING
John E. Emory, Sr., and John E. Emory, Jr., both of Traverse City, Mich., assignors to Big Jon, Inc., Traverse City, Mich.
Filed Jan. 7, 1972, Ser. No. 216,170
Int. Cl. A01k *91/00*
U.S. Cl. 43—43.12 **20 Claims**



A downrigger release mechanism for releasably securing a fishing tackle line to a separate downrigger or outrigger line. The mechanism comprises a cylindrical release member including one of two types of means for securing it to the downrigger line. One means fixedly secures the release

member to the downrigger line and weight. The other slidably secures the release member to the downrigger line such that the position of the release member on the downrigger line can be controlled by the amount of tackle line released. Further, in this latter embodiment the addition of other release members to the downrigger line is made possible, thereby allowing several fish to be caught without raising the downrigger line and/or release members. The mechanism utilizes two alternative removable release clip means directly securable to a release means formed integrally in the release member for releasably securing the tackle line to the release member.

3,778,919
HOOK EXTRACTOR PLIERS
James O. Simon, 2215 W. 15th St., Marion, Ind.
Filed Mar. 14, 1972, Ser. No. 234,561
Int. Cl. A01k *97/00*
U.S. Cl. 43—53.5 **3 Claims**

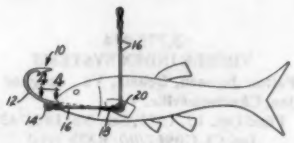


Hook extractor pliers having a push-plate on one of the jaws thereof, the plate facing toward the other pliers jaw which has a slot therein for accommodating the plate. A notch provided at the base of the plate permits the pliers to be guided along the shank of the hook and moved toward the bent portion thereof for disconnecting the hook from the mouth of the fish after which the jaws are closed to firmly grasp the hook therebetween for completely removing the hook from the fish.

3,778,920
FISHING BAIT RETAINER
Robert P. Anton, and Vernon P. Anton, both of 5915 N.E. Almeda, Portland, Oreg.
Filed Aug. 30, 1971, Ser. No. 175,953
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.4 **6 Claims**

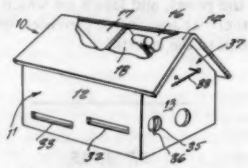
An elongated plastically deformable wirelike device for securing and retaining bait on a fishing hook. The device has flattened opposite ends, either one of which may conveniently be folded and clamped about a fishing line at the location where such attaches to a hook. The remaining portion of the device, i.e., that which extends away from an end thus fastened to a line, may be wound tightly around the hook's shank, and around any bait on the hook, thus to anchor the bait to the shank.

3,778,921
LIVE-BAIT FISH-HOOK
Lonn M. Peterson, 616 W. Ella, Willmar, Minn.
Filed July 29, 1971, Ser. No. 167,236
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.8 **3 Claims**



A fish-hook formed from a single piece of wire and including a bight portion, a looped eyelet formed adjacent the bight portion, a shank portion extending from the looped eyelet, and terminating in a shank eyelet. The shank eyelet is formed by bending the wire into a partial loop proximately abutting itself and continuing on away from the shank portion to provide a guiding surface permitting a retaining line to resiliently deflect the wire and essentially open the shank eyelet while being passed into the shank eyelet.

3,778,922
BIRDHOUSE SPARROW TRAP
James Webster Clark, Mendon, Mo.
Filed July 8, 1971, Ser. No. 103,353
Int. Cl. A01m *23/02*
U.S. Cl. 43—61 **2 Claims**

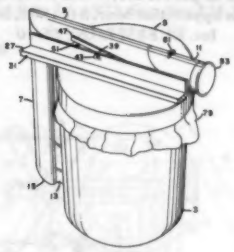


A trap for catching English sparrows, the device comprising a configurated enclosure having two separate chambers with a partition therebetween. The first of the chambers has an access opening from the outside thereinto and an exit opening through the partition into the second chamber, and a mechanism whereby a sparrow after entering the first chamber then closes the entrance opening and at the same time opens the exit opening so that the bird can pass through the partition into the second chamber from which it can be manually retrieved through a separate door.

3,778,923
AUTOMATIC MOUSE-TRAP DEVICE
Michael J. Cuoco, 2233 Helderberg Ave., Schenectady, N.Y.
Filed June 8, 1972, Ser. No. 260,911
Int. Cl. A01m *23/04*
U.S. Cl. 43—69 **9 Claims**

Discloses an automatic mouse-trap device comprising a drowning receptacle having a receptacle cover which carry brackets pivotally mounting an unbalanced horizontal runway tube tiltable through an elongated slot in the receptacle cover. The device has an inoperative position where there is closed communication from the bait receptacle through the horizontal runway tube and verticle access tube to the bottom open end of the vertical access tube to localize odor from bait in the bait receptacle to attract rodent entry. The adjoining ends of the access tube, runway tube, and bait receptacle are formed with cooperating 45° angles. Weight of a rodent on the unbalanced side of the horizontal runway tube tilts it downward

through the receptacle cover's elongated slot to dispose the rodent in the drowning receptacle and thereafter the over-



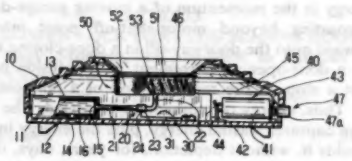
balanced side of the horizontal runway tube automatically returns the horizontal runway tube to its inoperative position.

3,778,924

INSECTICIDAL FUMIGATOR

Sakujiro Okui, Kyoto, Japan, assignor to Kodama Brothers Co., Ltd., Wakayama-ken, Japan

Filed July 21, 1972, Ser. No. 274,052
Int. Cl. A01m *13/00*
U.S. Cl. 43—129 **12 Claims**



In an insecticidal fumigator, liquefied gas available in the form of cigarette lighter fuel is ignited through an electric circuit including a radiating filament connected to a dry cell and a normally open pushbutton switch, and once ignited, it is kept catalytically burnt to heat a heating plate so that an insecticide imbued in a fibrous tissue element adjacent to said plate is smoked into the air.

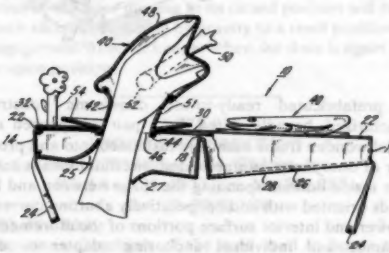
Said fumigator is provided with a safety device comprising a bimetallic actuator adapted to automatically close a valve when overheating takes place whereby a fuel supply pipe connected to said valve is prevented from feeding the fuel.

3,778,925

PUPPET TOY

Andrew Alden Owen, Tempe, Ariz., assignor to Ambassador International, Inc., Tempe, Ariz.

Filed June 15, 1972, Ser. No. 263,264
Int. Cl. A63h *33/00*
U.S. Cl. 46—13 **12 Claims**



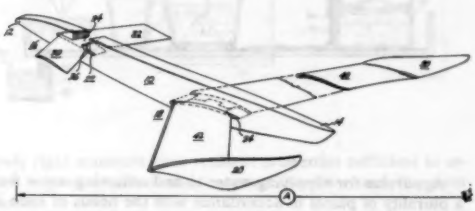
A pair of hand operable puppets are attached to a sheet. The sheet is attached to covers which can be closed to form an enclosed package containing the puppets and their support sheet. The covers are provided with access openings therethrough which permits access to the interiors of the puppets.

3,778,926

SLOW-FLYING AIRCRAFT

B. Michael Gladych, Issaquah, Wash., assignor to Gentle Toy Co., Inc., Bellevue, Wash.

Filed Aug. 11, 1972, Ser. No. 280,060
Int. Cl. A63h *27/00*
U.S. Cl. 46—79 **10 Claims**



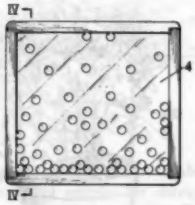
A slow-flying aircraft is disclosed in which there is a Canard or forewing standing out from the fuselage in advance of a transversely disposed rear-swept main wing having upward and outward and rear-swept stabilizer fins at its tips. The aircraft is formed of light-weight foamlike material. Means is provided to vary the decalage of the wing surfaces to permit increase or decrease of lift provided by the wings and also to increase or decrease drag. Preferably the wing elements are shiftably mounted in curved camber slots through the fuselage to provide variable flight performance of the aircraft. This abstract is neither intended to define the invention of this application which, of course, is measured by the claims; nor is it intended to be limiting as to the scope of the invention in any way.

3,778,927

AMUSEMENT AND EDUCATIONAL DEVICE

Benjamin Edden, 92 Bert Zait, Jerusalem, Israel

Filed Aug. 17, 1970, Ser. No. 64,448
Int. Cl. A63h *17/26*
U.S. Cl. 46—233 **9 Claims**



An amusement and educational device comprises a container having a closed compartment all the walls of which are of electrically insulating material, and a plurality of beads disposed in the compartment. The beads are of electrically insulating material and of small size such that after the container is shaken, a sufficient static electrical charge is produced by friction on the beads to support the upper ones against gravity in the compartment when the device is placed at rest. The front wall, and preferably also the rear wall, are made of transparent material to permit viewing the beads therein. In the preferred embodiment described, there are a plurality (five) of such compartments each separate and distinct from the others and each containing a plurality of differently colored spherical beads providing a dimensional effect.

3,778,928

PLANTER IRRIGATION SYSTEM WITH SAND DRAIN

Evert S. Green, 14 Kenneth Ave., North Bellmore, N.Y.

Continuation-in-part of Ser. No. 10,147, Feb. 10, 1970, abandoned. This application May 7, 1971, Ser. No. 141,113

Int. Cl. A01g 27/00

U.S. Cl. 47—38.1 4 Claims

Apparatus for supplying water to and removing water from a plurality of plants in accordance with the needs of each individual plant is disclosed. The apparatus includes a water reservoir which by capillary action continuously circulates water through a drain controlled water transmitting agent. The plants are placed on the water transmitting agent and by capillary action can receive as much water as they require from the water in the transmitting agent discharging their dissolved waste products to the transmitting agent where they are carried to the drain mechanism away from the plants themselves.

3,778,929

PLANT GROW GUIDE

Theodore A. Pearson, 71 Hancock Ave., Newton Center, Mass.

Continuation of Ser. No. 17,698, March 9, 1970, abandoned. This application July 12, 1971, Ser. No. 161,858

Int. Cl. A01g 17/14

U.S. Cl. 47—58 4 Claims

Many plants grown in pots require stacking and binding at a time near their maturity. A self-positioning collar is set in the pot with a stake when the plants are small. As the plants grow the collar is raised along its stake by the plant growth, adjusting to the changing size of the plants. At maturity, the potted plants are supported and retained by the staked collar which prevents the individual plants from bending too far away from the pot, thereby presenting a neat and unified appearance for the potted plant, and making the potted plant easy to secure and handle.

3,778,930

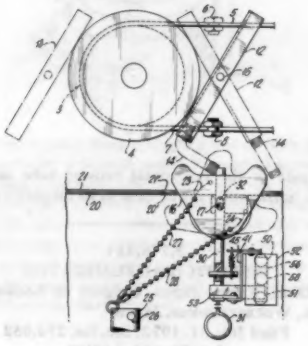
GARAGE DOOR ENERGY STORED AND EMPLOYED

Frederick A. Purdy, 870 United Nations Plaza, New York, N.Y.

Continuation-in-part of Ser. No. 25,016, April 2, 1970, abandoned. This application Mar. 31, 1971, Ser. No. 129,843

Int. Cl. E05f 15/20, 15/10

U.S. Cl. 49—25 11 Claims



Energy in the momentum of a moving garage-door admits door-coasting beyond motor-shut-off point into collision downward onto the doorway-sill in a door-closing movement; or, in a door-opening movement, into collision horizontally against a stop on the rearward end of a horizontal support track. Thus, energy of momentum is wasted. The instant invention captures wasted energy, puts the energy into storage, and holds it, without depletion, for years, days, or minutes, and, when opportune, releases and employs the energy to close an electric-circuit to door-drive motor for opening or closing the door.

3,778,931

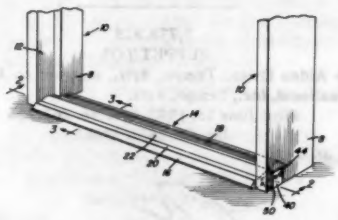
THRESHOLD ANCHOR DEVICE

Tommie C. Donaldson, Rt. 3, Box 1156, Odessa, Tex.

Filed July 17, 1972, Ser. No. 272,220

Int. Cl. E06b 1/04

U.S. Cl. 49—380 2 Claims



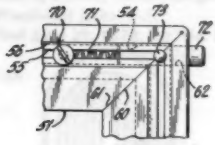
A prefabricated ready-to-use doorframe construction characterized, broadly stated, by a pair of opposed spaced parallel wooden frame members fashioned into and providing a pair of doorjambs, prefabricated threshold means embodying an inside doorsill spanning the space between and having its ends oriented with and cooperatively abutting corresponding lower end interior surface portions of the aforementioned doorjambs and individual anchoring adapter or devices secured to coordinating end portions of said threshold means and also secured to coacting lower end portions of said doorjambs usually by way of screw-threaded headed fasteners.

3,778,932

DOOR AND HINGE ASSEMBLY

Robert L. Ewing, Newark, Ohio, assignor to Holophane Co., Inc., New York, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,787
Int. Cl. E05d 7/08
U.S. Cl. 49—388 2 Claims



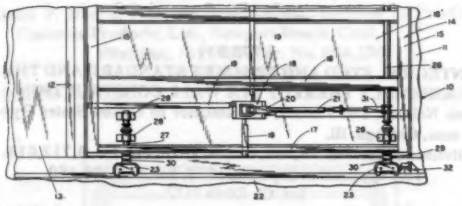
A door and hinge pin assembly with a frame of extruded aluminum for supporting a door panel and retractable hinge pins within the aluminum extrusions for cooperation with corresponding hinge bearings in a door frame or jamb.

3,778,933

HOLD-OPEN LOCK FOR PLUG SLIDING DOOR

Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sept. 13, 1971, Ser. No. 179,667
Int. Cl. E05d 13/04
U.S. Cl. 49—449 5 Claims



A combination plug and sliding door for a railway box car is retained in an open position by means of a locking device supported on the door track positioned beneath the door opening. The lock device includes a latch element which is rotated to a disengaged position relative to a keeper on the door. Normal vibration of the door moving to its closed position will result in the latch element dropping by gravity to a reset position ready for engagement with the keeper when the door is again moved to the open position.

3,778,934

DOOR CONSTRUCTION

Frank G. Fisher, 2709 Whipple St., Elkhart, Ind.

Filed Aug. 28, 1972, Ser. No. 284,257
Int. Cl. E06b 3/00
U.S. Cl. 49—503 3 Claims

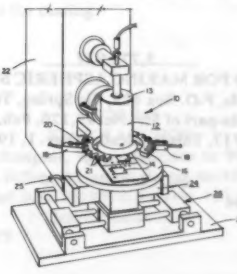
A structure for doors of the type used in house trailers, recreational vehicles, boats and the like, where a concave camber is formed in the door to insure an adequate weather seal between the unhinged edges of the door and the door frame. The door includes one or more integral relatively rigid members preshaped to impart the desired camber. The relatively rigid members have resilient properties sufficient to assure a good weather seal between the door and the door frame.

3,778,935

ABRADING APPARATUS WITH ROTARY INDEX TABLE

John William Callahan, Lanoka Harbor, N.J., and Martin J. Capdeville, Staten Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 26, 1972, Ser. No. 220,977
Int. Cl. B24c 3/22
U.S. Cl. 51—8 10 Claims



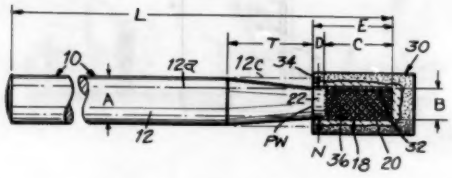
An abrading apparatus has a rotatably reciprocating worktable, and a vertical nozzle for directing an abrasive stream downwardly toward the worktable. The worktable has a plurality of workpiece holding zones thereon, each being designed to locate and secure a workpiece which is to be abraded. A control system is provided which includes a manual-automatic switch, the latter permitting the apparatus to be operated in either of two modes. In the manual mode, an operator depresses a switch to index the worktable to bring a holding zone, and consequently a workpiece under the abrading nozzle; the operator then depresses a second switch to initiate and complete the abrading operation. In the automatic mode, the operator depresses a single switch to index the worktable, and initiate and complete the abrading operation. In both modes, as one workpiece is being abraded, the operator is locating another in the holding zone which will subsequently be moved under the abrading nozzle.

3,778,936

MOUNTED ABRASIVE POINT

Wilfred A. Steadman, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed May 12, 1972, Ser. No. 252,618
Int. Cl. B24b *45/00*
U.S. Cl. 51—168 5 Claims



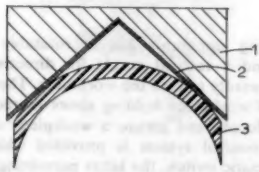
A relatively small diameter mounted abrasive point or grinding wheel with a supporting drive spindle of increased strength provided without increasing the hole size or reducing the amount of usable abrasive in the abrasive wheel. The spindle has a wheel mounting end portion, including a knurled portion and a shorter adjoining plain cylindrical portion of equal diameter and greater strength embedded in the abrasive point rigidly supported by and fixedly secured thereto. An inner side of the abasive point is positioned in a plane which passes through the adjoining plain cylindrical portion of greater strength. Initially the knurled portion is preformed to cylindrical shape with a diameter equal to its pitch diameter and thereafter the metal is displaced by knurling to the diameter of the adjoining cylindrical portion.

3,778,937

METHOD FOR MAKING ASPHERIC SURFACES

Charles W. Neefe, P.O. Box 429, Big Spring, Tex.

Continuation-in-part of Ser. No. 15,120, Feb. 27, 1970, Pat. No. 3,641,717. This application Nov. 1, 1971, Ser. No. 194,327
Int. Cl. B24b *13/00*
U.S. Cl. 51—284 5 Claims



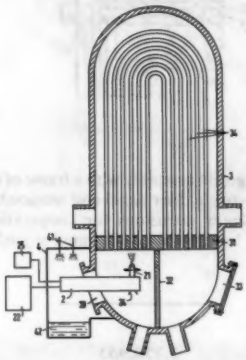
A method of generating aspheric convex surfaces by abrading a spherical surface against a concave cone. The cone being tangent to the spherical surface at a point between the center and edge. The cone tangent against the spherical surface abrades the sphere to produce an aspheric surface having a shorter radius at the center and a longer radius at the edge than the original sphere.

3,778,938

METHOD FOR DECONTAMINATION OF SURFACES OF NUCLEAR REACTOR COMPONENTS

Roland Korn, Nurnberg; Gunther Seyd, and Uwe Paulsen, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 4, 1972, Ser. No. 223,471
Claims priority, application Germany, Feb. 17, 1971, P 21 07 479.3
Int. Cl. B24c *1/00*
U.S. Cl. 51—320 6 Claims



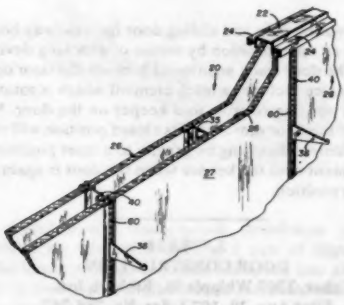
Cleaning of radioactively cotaminated surfaces and components of nuclear power reactors is carried through by means of sandblasting technique, wherein boron trioxide sand is used as the blasting medium. The process is carried out such that the passivation layer on the surfaces to be cleaned is not attacked and that water is used for flushing out the blasting materials which may have remained on the surfces which have been cleaned.

3,778,939

INTEGRAL STUD AND BRACKET STANDARD AND THE ASSEMBLY THEREOF IN A WALL CONSTRUCTION

Nels Nelsson, Des Plaines, Ill., assignor to United States Gypsum, Chicago, Ill.

Division of Ser. No. 79,580, Oct. 9, 1970, Pat. No. 3,712,015. This application Sept. 12, 1972, Ser. No. 288,450
Int. Cl. E04b *2/32*
U.S. Cl. 52—36 8 Claims



A stud and wall assembly constructed therewith for supporting shelf brackets and the like, the stud having as an integral part thereof, both a slotted flange for engaging shelf brackets, and as an extension of the flange, flat surfaces for engaging partition members which make up the wall. The slotted por-

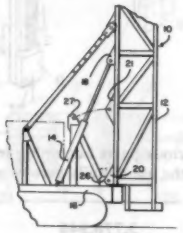
tion of the flange may be recessed within the stud or projected therefrom, so as to conceal or expose, respectively, the slotted portion. Additional bracket-supporting hooks can be extruded as part of the flange. The over-all cross-sectional configuration of most of the embodiments of the stud is an "H"-shaped configuration.

3,778,940

TRANSFERENTIAL PIN

William E. Blecken, Seattle, Wash., assignor to Ingersoll-Rand Company, Woodcliffs Lake, N.J.

Filed June 29, 1972, Ser. No. 267,548
Int. Cl. E04h *12/34*
U.S. Cl. 52—116 **5 Claims**



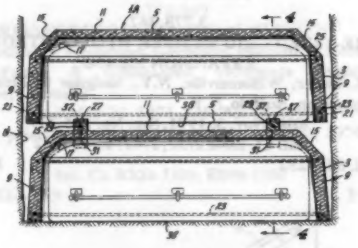
A vehicle mounted tower pivoted on the vehicle by two pivot joints spaced along the length of the tower and alternately engageable during the swinging of the tower between horizontal and vertical positions by a hydraulic cylinder extending between the vehicle chassis and the tower. Alternate use of spaced pivot points reduces the loading on the lift cylinder and improves angular control in drilling operations.

3,778,941

BELL-LINER PROTECTOR

John P. Dorris, Newport Beach, Calif., assignor to Pre-Cast Concrete Products, Ltd., Newport Beach, Calif.

Filed Dec. 11, 1969, Ser. No. 884,220
Int. Cl. E04h *13/00*
U.S. Cl. 52—124 **12 Claims**



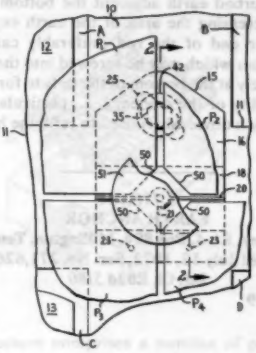
The invention comprises a one piece, concrete, bell type grave liner or protector to be lowered into a grave to enclose a casket. The protector has notches cast in its lower corners, corner edges, or bottom edges to receive a hoisting cable, thereby making handling easy. The protector has a top designed to resist vertical loads, cave-in of the side walls, and a sluffing-off of earth when an excavation is made next to it. The top is also designed to receive saddles for supporting a second protector for double interment. The protector is useful in conjunction with a base for either single or double interment. All side walls are tapered, i.e., inclined downwardly and outwardly to keep the protector from being raised, or "floating" to the surface, when unstable soils become saturated through sprinkling, rain, or exceedingly high water table.

3,778,942

MARBLE HANGER FOR CRYPT FRONT

Herman H. Bondi, 1224 S.E. Henry St., Portland, Oreg.

Filed Aug. 30, 1972, Ser. No. 285,129
Int. Cl. E05c *19/18*; **E04h** *13/00*
U.S. Cl. 52—134 **4 Claims**



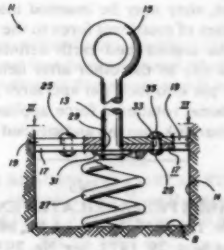
A one-piece metal hanger casting has an inclined slot of special configuration in its upper portion to permit horizontal, vertical and diagonal adjustment on a single hanger bolt. Two holes in a lower portion of the casting provide for the optional placement of a stabilizing pin to prevent swaying in an earthquake. In a central position, a thickened portion of the casting provides an abutment for the rear faces of marble wall panels while a forwardly projecting horizontal flange on the thickened portion forms a ledge for supporting a pair of upper panels. A tapped boss in the middle of the flange receives a threaded stud on a rosette which clamps the adjacent corners of four panels to the casting.

3,778,943

EARTH ANCHOR

Leon E. Day, Memphis, Tenn., assignor to William A. Rolen and James B. Sellers, Memphis, Tenn., part interest to each

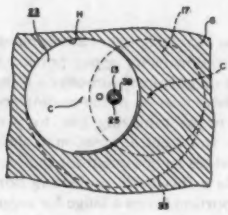
Filed June 28, 1971, Ser. No. 157,352
Int. Cl. E02d *5/74*
U.S. Cl. 52—157 **10 Claims**



A device for anchoring a structure, e. g., a mobile home or the like, to the ground so that the structure has at least equal

ability to withstand high winds as do conventional residential structures. The device is intended to be received in a prepared hole in the ground and includes a rod having an eye or the like at the one end for attachment of typical cable structure thereto. The opposite end of the rod has fixedly attached thereto a platelike member which freely pivotally supports a pair of extendable knifelike members. The device is lowered into the hole and the knifelike members are urged outwardly into the undisturbed earth adjacent the bottom of the hole, thus greatly increasing the area of the earth engaging structure. The lower end of the rod preferably carries a corkscrewlike member which may be screwed into the undisturbed earth immediately at the bottom of the hole to further increase the holding ability of the device, i. e., particularly while the loose earth, which obviously is used to refill the hole, has fully compacted.

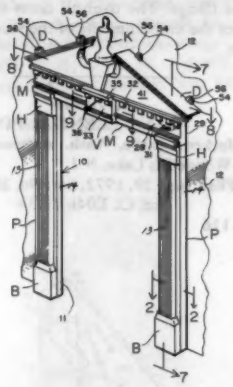
3,778,944
EARTH ANCHOR
Challice F. Easley, Rt. 4, Box 894, Millington, Tenn.
Filed July 12, 1972, Ser. No. 271,626
Int. Cl. E02d *5/80*
U.S. Cl. 52—159 **3 Claims**



An earth anchor for insertion into a prepared hole in the ground. The anchor includes a rod having the first of two substantially identical disks perpendicularly disposed and fixedly attached to the lower end thereof. The rod is freely received in an aperture provided in the second disk. The second disk contiguously engages the first disk. The aperture in the second disk is positioned a predetermined distance from the center thereof and the predetermined distance corresponds to the location to which the rod is attached to the first disk. Therefore, rotational movement of the rod is effective to align or misalign the two disks. The prepared hole preferably is slightly larger in diameter than are the diameters of the disks so that when the disks are aligned, they may be inserted into the hole. Subsequent application of rotational force to the rod drives one of the disks into the undistrubed earth defining the hole. The disks are locked one to the other after being misaligned by thrusting a lock pin into lock pin apertures provided in both the disks. Additional rotational force applied to the rod may now drive the other disk into the undistrubed earth.

3,778,945
ADJUSTABLE PREFABRICATED ENTRYWAY
Robert S. Medow, 15840 W. Prestwick Pl., Miami Lakes, Fla.
Filed Sept. 29, 1972, Ser. No. 293,519
Int. Cl. E06b *1/30*
U.S. Cl. 52—217 **3 Claims**

A prefabricated entryway made of molded fiberglass consisting of individual fluted pilasters, base and head blocks, a mantel made in two parts, a mantel overlay, a pediment made in two parts, a combined urn and urn base and a plurality of spring clips. The entire assembly is readily erected in place on a wall about an opening upon the spring clips being fastened to

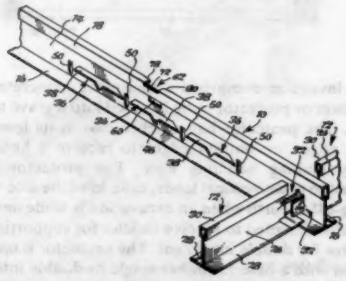


the wall and the various parts becoming interlocked and interengaged without the use of nails, screws and the like.

3,778,946
TRUSS AND METHOD OF MAKING SAME
Gordon G. Wood, Glen Ellyn, and James L. McCabe, Wheaton, both of Ill., assignors to Woodco Ltd., Glen Ellyn, Ill.
Filed Dec. 21, 1970, Ser. No. 100,282
Int. Cl. E04c *3/10, 5/08*
U.S. Cl. 52—223 R **8 Claims**

Camber is automatically attained in the chords of a truss by means of tensioned tensors and compression members between the top and bottom chords of the truss.

3,778,947
FIRE-RATED GRID MEMBER WITH CONTROLLED EXPANSION MEANS
Gale E. Sauer, Williamsville, N.Y., assignor to Flangeklamp Corporation, Buffalo, N.Y.
Filed Nov. 3, 1971, Ser. No. 195,237
Int. Cl. E04c *2/52, 2/42*; **E04b** *5/52*
U.S. Cl. 52—232 **14 Claims**



A fire-rated grid member having a plurality of cut-out sections in the web thereof defining connecting portions for con-

trolling deformation of the grid member to predetermined areas upon expansion. The bead surmounting the web is deformed to create a weakened portion deformable upon grid member expansion. The opposite ends of the grid member are provided with a slot and tongue arrangement for splicing adjacent grid members together.

3,778,948

INSTALLATION FOR CONTROLLING THE CONDITION OF WATER IN CONCRETE STRUCTURES

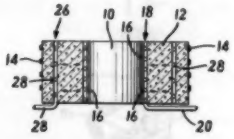
Rene Marie Berthier, 4, rue Wilfried Kilian, Grenoble, France

Continuation-in-part of Ser. No. 647,940, June 22, 1967, abandoned. This application Oct. 2, 1970, Ser. No. 77,682

Claims priority, application France, June 22, 1967, 674964

Int. Cl. E04b *1/16*

U.S. Cl. 52—302 **6 Claims**



Disclosed herein is a reinforced concrete structure for surrounding a nuclear reactor vessel containing a high-temperature, highly pressurized fluid. The concrete structure has a concentrically configured drainage network therein for evacuating water and vapor from the concrete structure, to prevent destruction thereof due to excessive vapor pressure caused by heat absorbed from the reactor. The drainage network is arranged so that the direction of vapor flow is opposite to the thermal flux within the structure, and comprises perforated pipes or prefabricated blocks assembled within the structure, adjacent the vessel, and connected to drain conduits for allowing the water and vapor to be removed from the concrete structure.

3,778,949

REINFORCED STRUCTURAL ELEMENT

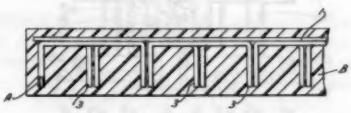
Walter Hellerich, Heilbronn, Germany, assignor to Arbed S.A. Arbed-Felten & Guilleaume Vereinigte Drahtwerke, Cologne, Germany

Filed May 20, 1971, Ser. No. 145,200

Claims priority, application Germany, May 20, 1970, P 20 24 453.5

Int. Cl. B32b *5/00*; E04c *1/00*

U.S. Cl. 52—309 **3 Claims**



A body of synthetic plastic material has an exposed surface and reinforcing means in form of one or more layers of wires which are embedded in the body. Anchoring means in form of wire sections extend from the region of the exposed surface to the reinforcing means and are connected therewith.

3,778,950

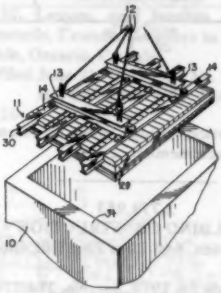
REMOVABLE REFRACTORY FURNACE COVER

Herbert C. Philander, Chicago, Ill., assignor to Chicago Fire Brick Company, Chicago, Ill.

Filed June 22, 1972, Ser. No. 265,192

Int. Cl. F23m *5/04*

U.S. Cl. 52—483 **7 Claims**



A roof structure comprises a number of parallel I-beams each having a row of refractory tiles having T-shaped slots which fit over a flange of the I-beam. Reinforcing steel plates are disposed between adjacent tiles of a row. The plate has a web portion overlying a side surface of one tile with a T-shaped opening of shape and dimensions the same as T-shaped slot in the tile. The plate also has a flange at its remote edge which extends into a groove formed in the side surface of the tile. The plate retains the tile in position on the I-beam in the event that the interlocking portion of the tile is broken.

3,778,951

REINFORCEMENT

Georgi Oroschakoff, Simon-Denk-Gasse 7/7, Wien IX, Austria

Filed Nov. 30, 1970, Ser. No. 93,822

Claims priority, application Austria, Nov. 28, 1969, A11166/69

Int. Cl. E04h *12/18*; E04c *2/42*

U.S. Cl. 52—646 **3 Claims**

At least one pair of reinforcing sections are provided, each of which has at least two dimensions and which interengage to form a self-supporting reinforcement which is rigid at least in one direction.

3,778,952

STUD BRACING FOR METAL STUDS

Eugene H. Soucy, 16 Richard St., West Hartford, Conn.

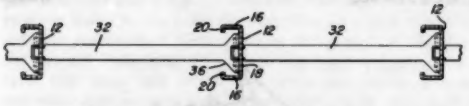
Filed May 5, 1972, Ser. No. 250,813

Int. Cl. E04c *2/42*

U.S. Cl. 52—667 **5 Claims**

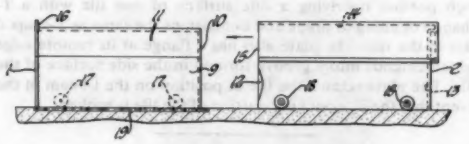
A bracing assembly for use between adjacent channel-shaped sheet metal studs of the type having generally cruciform openings formed through the bight portions thereof. The bracing assembly includes a pair of end aligned bracing members with adjacent ends thereof being releasably engaged

with each other and including endwise outwardly facing abutment surfaces for opposing remote sides of an associated sheet



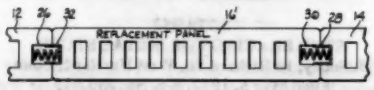
metal stud bight portion through which an extended end portion of one of the brace members extends.

3,778,953
BUILDING CONSTRUCTION
John Zachary Delorean, 640 Lone Pine Hill, Bloomfield Hills, Mich.
Filed July 24, 1972, Ser. No. 274,779
Int. Cl. E04b *1/35*
U.S. Cl. 52—745 **15 Claims**



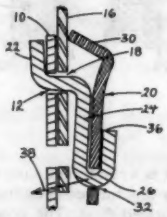
Inner and outer mold members are moved into juxtaposition on a building site to provide a cavity for casting a monolithic shell, open at one end and consisting of two side walls, one end wall and the roof of a building. After filling said cavity with hardenable material and subsequent withdrawal of the mold members from the shell, a utility unit is moved into the shell through said open end, which is thereafter closed with a window and door containing wall.

3,778,954
METHOD OF REPLACING A DAMAGED BULKHEAD PANEL
Robert H. Meserole, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Continuation of Ser. No. 83,537, Oct. 23, 1970, abandoned.
This application Sept. 7, 1972, Ser. No. 287,192
Int. Cl. E04b *1/00;* **E04g** *21/00*
U.S. Cl. 52—747 **4 Claims**



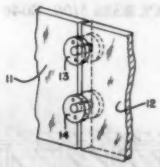
A method of replacing a damaged panel in a bulkhead without the necessity of removing or temporarily repositioning undamaged panels on either side thereof. First, the damaged panel is removed by complete destruction. Thereafter grooves are formed on the edges of undamaged panels which face the opening created by the removal of the damaged panel. Grooves are formed on oppositely facing edges of a replacement panel which is then inserted into the opening so that the newly formed grooves on the panels face one another to define a cooperating cavity. Means are provided to substantially fill this cavity so as to interfere with the removal of the replacement panel.

3,778,955
ATTACHMENT FOR PERFORATED BOARDS
James Garth Close, 3215 29th St., Lubbock, Tex.
Filed Mar. 14, 1972, Ser. No. 234,532
Int. Cl. F16b *5/00*
U.S. Cl. 52—758 D **7 Claims**



A releaseable peg means for a perforated panel or the like for attaching and supporting objects from said panels. Said peg means having a body extending through perforations in said panel and a head attached to said body for releasably attaching said peg means in position on said panel.

3,778,956
GLASS PANE FASTENING
Richard W. Martin, 25 Corte St., North Easton, Mass.
Filed May 12, 1971, Ser. No. 142,512
Int. Cl. F16b *5/02*
U.S. Cl. 287—189.36 D **9 Claims**



Large adjacent glass panes are fastened together by means including a glazing button comprising a stem that is preferably thinner than the glass to be joined coacting with two shoulder portions to define a pair of recesses slightly larger than the thickness of the adjacent glass panes to be connected. At least one of the shoulder-defining portions is threaded for receiving a member with an internally threaded socket that may be tightened to securely interconnect the adjacent panes of glass.

3,778,957

ADJUSTMENT FASTENER

Walter T. Appleberry, Long Beach, Calif.

Filed Oct. 2, 1972, Ser. No. 293,764
Int. Cl. F16b 7/18
U.S. Cl. 52—758 D 7 Claims

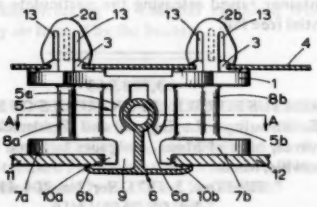
A fastener for adjusting the spacing between a panel and a support or object wherein mating sets of male and female inserts between them have reverse threads or threads of different pitch. Rotation of the male portions cause longitudinal expansion and contraction to vary the spacing between the panel and object. A single tool, an Allen wrench T-handle, may be used for panel handling, insertion and attachment of parts and their adjustment.

3,778,958

PANEL SPACING AND HOLDING CLIP

Gerald Fowler, Chorley, England, assignor to British Leyland Truck & Bus Ltd., Leyland, Lancashire, England

Filed Jan. 29, 1971, Ser. No. 111,071
Claims priority, application Great Britain, Jan. 30, 1970, 4577/70
Int. Cl. F16b 5/07
U.S. Cl. 52—760 16 Claims



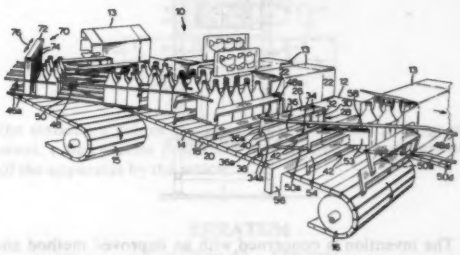
Trim panels are held on by clips each of which has: a plurality of pegs or other means by which it may be applied to or engage a support; lugs or projections arranged to locate the adjacent edges of two panels against the clip; and means to engage and retain a finishing mould which is adapted to retain the panels against the clip and cover the joint between the panels.

3,778,959

END LOADERS

Marinus J. M. Langen, and Jacobus J. Langen, both of Rexdale, Ontario, Canada, assignors to H. J. Langen & Sons Ltd., Rexdale, Ontario, Canada

Filed June 21, 1972, Ser. No. 264,891
Int. Cl. B65b 21/06, 35/30
U.S. Cl. 53—26 19 Claims



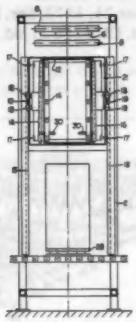
In a machine for loading shipper packages such as cartons, trays or the like with containers such as bottles, cans or the like, the improvement of a mechanism for arranging the containers in a series of spaced apart pay-loads while continuously moving the container along a predetermined path. The apparatus includes a conveyor means and a plurality of transversely extending spaced apart fence means mounted on the conveyor. A plurality of container slips, each inclined at an acute angle to the longitudinal direction of the conveyor, are mounted to open onto a marginal edge of the conveyor. Each of the fences has a leading edge which is adapted to engage a container from each of slips in turn as it is driven by the conveyor across the plurality of slips to move the container engaged thereby along its respective slip. The trailing edge of each of the fences is adapted to restrain the movement of the containers through the slips until raked therefrom by the leading edge of the next following fence. The ends of the slips are open at a point spaced inwardly from one edge of the conveyor and the fences pass through the guide rails during their longitudinal movement with the conveyor so as to rake a predetermined number of containers from the discharge end of each slip into each compartment to establish the required pay-load. In addition, the present invention provides an improved mechanism for guiding the containers transversely of the conveyor to discharge into the unloading shipper packages. The improvement consists of a transverse guide rail structure which extends transversely of the conveyor means and is adapted to permit the fences to pass therethrough during their passage along the conveyor means. The transversely extending guide rail means is characterized by a lower guide rail which has a first portion adapted to underlie the lower bar of the fence means and a second portion adapted to overlie the lower bar of the fence means in the area which overlies the fence support pad. The present invention also provides an improved method of discharging containers from a conveyor into an end loading shipper package wherein the conveyors are firstly arranged in at least two rows of containers, one row being staggered with respect to the other row and thereafter moving the containers transversely of the conveyor into the open end of a shipper package and then one row of containers is moved relative to the other so that the containers are moved out of the staggered relationship into a parallel relationship in two planes and thereafter closing the shipper package.

3,778,960

AUTOMATIC PACKING DEVICE FOR PALLET STACKS AND THE PROCEDURE PECULIAR HERETO

Borge Christensen, Farum, and Hans Hansen, Malov, Denmark, assignors to Ingeniorfirmaet Borge Christensen Kastanievalle, Farum, by said Christensen and Ingeniorfirmaet Hans Hansen, Malov, Denmark, by said Hansen

Filed Sept. 16, 1970, Ser. No. 72,785
Int. Cl. B65b *43/30*
U.S. Cl. 53—29 8 Claims



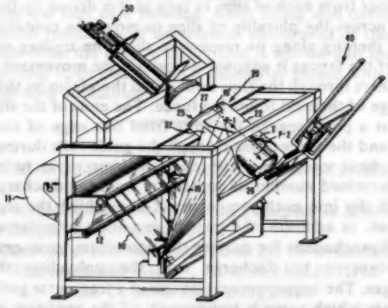
The invention is concerned with an improved method and machine of packing goods items into hoods, whereby each hood is fitted over the goods without being torn by sharp corners of the goods and at high speed.

3,778,961

TUBE AND PACKAGE MAKING METHODS

Herbert A. Lesher, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1972, Ser. No. 228,276
Int. Cl. B65b *9/08*
U.S. Cl. 53—28 1 Claim



A method is provided of forming a tube from a flat web of material including the steps of:

providing a web having at least sealable edge parts;

moving the web around the surfaces of a tube forming means to form a tubular structure with at least the sealable edge parts in overlapping relationship with each other;

bonding the overlapping edge parts together and passing the tubular structure along the outer surface of the tube forming means and around a lip of the tube forming means and into the interior thereof to form a tube receptive for filling.

The overlapping edge parts of the tubular structure are sealable by pressure, or heat if desired, and the movement of the tubular structure is under tension so as to provide the forces necessary to align and assist in sealing the overlapping edge parts as the tubular structure is moved.

A method also is provided of making a package using the tube described above including the further steps of:

closing the formed tube at its end;

inserting an article in the tube;

forming a closure in the tube adjacent to the article; and

severing the tube adjacent to the closure to form a package.

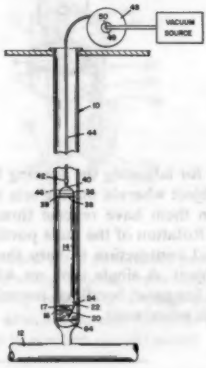
The tube may be evacuated of air prior to closing the portion of the tube adjacent to the article and the closed tube may then be shrunk into contact with the article to form a shrink package.

3,778,962

VACUUM CONTROLLED VESSEL LOADING WITH PARTICULATE MATERIALS

Maurice L. James, Pinole, Calif., assignor to Calcato, Inc., Richmond, Va.

Filed Mar. 30, 1972, Ser. No. 239,552
Int. Cl. B65b *1/06*
U.S. Cl. 53—35 11 Claims



Method for loading friable particulate matter without substantial free fall into vertical columns. A container is provided having first and second openings. The first opening includes means for vacuum closure of the container, while the second opening is for joining to a grid protected connection to a vacuum line. The vacuum controlled opening may be a flap which is hermetically sealed to a rigid collar or a cylindrical plastic sheet which collapses upon itself to provide a hermetic seal. After the container is filled, the vacuum applied and the vacuum seal formed, the container may be lowered into the column to a solid surface. The vacuum is then partially or completely released, which causes breaking of the seal, and the container raised releasing the particulate matter without substantial free fall.

3,778,963

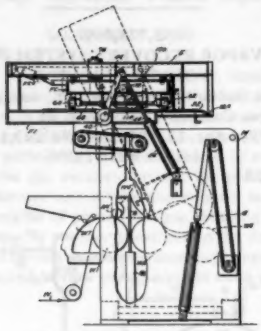
APPARATUS FOR WRAPPING ROLLS OF MATERIALS

John E. Straujups, Lexington, and Frederick J. Bellwood, Braintree, both of Mass., assignors to Birch Brothers, Inc., Somerville, Mass.

Filed Dec. 3, 1971, Ser. No. 204,419
Int. Cl. B65b *13/16*
U.S. Cl. 53—66 8 Claims

A roll wrapper apparatus for attachment on a web winding machine of the class commonly employed in winding webs of textiles, plastics, and the like, includes means for furnishing and applying a measured length of wrapping material around a roll of cloth or other material which has been wound in the web winding machine. The wrapper apparatus is constructed with means for feeding and cutting a desired length, applying

adhesive along one edge of wrapping sheet, means for positioning the wrapper sheet in suitable relation to a wound goods roll, and means for advancing the wrapper sheet into the goods roll while it is rotating in the winder machine. A



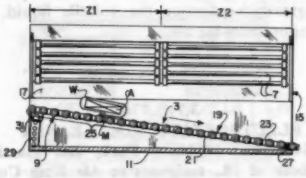
completed goods roll is doffed from the web winding machine with wrapping secured around it. Control circuitry for the web winding machine may be connected into operating circuits for the wrapping operation so that winding and wrapping may be automatically handled in suitably timed relationship.

3,778,964

APPARATUS FOR SHRINK PACKAGING

Frederick F. Rowland, Ferguson, Mo., assignor to Roll-O-Sheets, Incorporated, St. Louis, Mo.

Filed Nov. 15, 1971, Ser. No. 198,642
Int. Cl. B65b *53/02*
U.S. Cl. 53—184 **3 Claims**



Apparatus for shrink-packaging articles in a heat-sealable, heat-shrinkable plastic film wrapper, in which the wrapper is heated for heat-sealing by means located below the article as it is conveyed through the apparatus, this heat-sealing means being heated by thermal radiation from thermal radiation heaters within the apparatus, and in which the wrapper is heated for heat-shrinking by thermal radiation from these heaters and by air heated by the heaters.

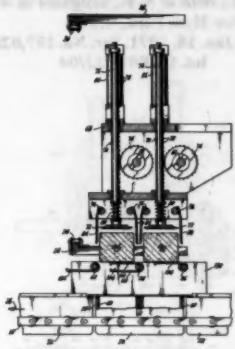
3,778,965

LOADING SYSTEM FOR PACKING MACHINE

Anthony J. O'Lenick, Fairlawn; Douglas P. Roome, Cedar Grove, and Joseph T. Gabriel, Lincoln Park, all of N.J., assignors to Standard Packaging Corporation, New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 208,847
Int. Cl. B65b *39/02*
U.S. Cl. 53—248 **2 Claims**

A loading system for use in a packaging apparatus is disclosed as including a conveyor for moving the article to be packaged to a first operations station and then to a loading station. At the loading station, clamps are provided to grip the article, loading doors are provided to support the article while it is being clamped and to release the article into a package element. Stationary guides are provided at the loading station to assist in directing the article upon its release through the loading doors. Furthermore, the loading doors themselves are constructed and arranged to funnel the article in cooperation with



the stationary guides in precise position to the package element, which precise position is necessitated to avoid jamming of the apparatus by the article.

ERRATUM

For Class 53—159 see:
Patent No. 3,778,972

3,778,966

FACE FLY SCREEN

Willis Hadley, P.O. Box 297, Ferndale, Calif.

Filed Feb. 4, 1972, Ser. No. 223,485
Int. Cl. B68b *1/02*; **B68c** *5/00*
U.S. Cl. 54—81 **7 Claims**

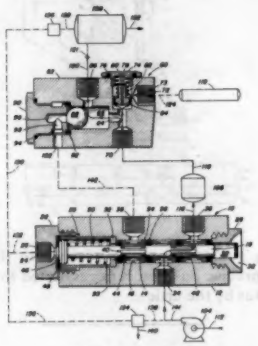
A face fly screen having an improved rigging comprised of a browband, a nose web secured to and extending downwardly and forwardly from the browband, a headstall adjustably connected at its ends to respective ends of the browband, a nose rope coupled to the forward end of the nose web, and a cheek rope coupled to the ends of the browband. The ends of the nose and the cheek ropes are adapted to be coupled together such as by being tied together, in the throat latch region of a horse with the length of the nose web being sufficient to position the nose rope forwardly of and in proximity to the laterally projecting cheekbones of a horse when the rigging is mounted on the head of the horse. The headstall has an S-shaped extension which frictionally engages the adjacent end of the browband to releasably maintain the headstall at a fixed length. A number of strands are secured to and are suspended from the browband to cover the face of the horse yet allow the latter to see through the strands when the rigging is mounted on the head of the horse.

3,778,967

APPARATUS AND PROCESS FOR THE FRACTIONATION BY THE ADSORPTION OF A COMPRESSED GAS

George C. Kauer, Jr., Plainview, L.I., and Louis E. Brooks, Great Neck, L.I., both of N.Y., assignors to Air Techniques Incorporated, New Hyde Park, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,028
Int. Cl. B01d *53/04*
U.S. Cl. 55—21 12 Claims



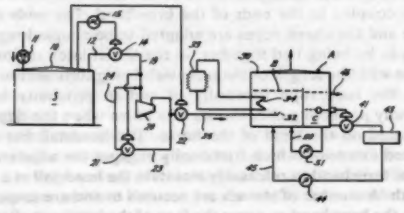
A system and apparatus for effecting the adsorption of a component of a compressed gas wherein compressed gas is continuously available to the user equipment. The compressed gas is passed through a valve assembly and after being subjected to adsorption in a tower is divided with a portion being passed to a storage tank for user equipment supply. Another portion is passed to a purge tank for subsequent regeneration of the adsorbent. Upon reaching a predetermined pressure in the storage tank, a control device associated with the storage tank arrests the flow of compressed gas from the compressor to the adsorption tower maintaining, however, the compressor and storage tank in fluid communication. Simultaneously, the purge tank is placed in fluid communication with the atmosphere through the adsorption tower by the valve assembly, to permit the compressed gas therein to flow through the adsorption tower under conditions to regenerate the adsorption material. The compressor is directly or indirectly in fluid communication with the storage tank under any condition of valve assembly configuration.

3,778,968

METHOD AND APPARATUS FOR CONTROLLING AIR POLLUTION CAUSED BY VOLATILE EMISSIONS FROM STORAGE TANKS AND THE LIKE

George Parker, Sr., Corpus Christi, Tex., assignor to J. B. Trimble and Dwain Smith, both of Houston, Tex.; part interest to each

Filed Aug. 10, 1972, Ser. No. 279,499
Int. Cl. B01d *53/14*
U.S. Cl. 55—32 8 Claims



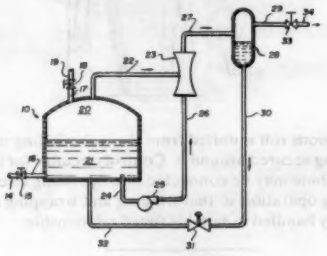
Method and apparatus for controlling air pollution caused by volatile emissions from petroleum storage tanks and the like, wherein such volatile emissions or vapors are passed through a brine or glycol solution having a controlled temperature range for separating petroleum hydrocarbons, water and air and for collecting the hydrocarbons so that they do not escape to the environment.

3,778,969

EJECTOR VAPOR RECOVERY SYSTEM FOR STORED VOLATILE LIQUIDS

Jackie Wayne Sudduth, Brookfield, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Apr. 12, 1972, Ser. No. 243,187
Int. Cl. B01d *19/00*
U.S. Cl. 55—55 8 Claims



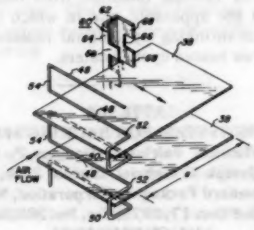
A process of separating a volatile liquid vapor from admixture with air by pressurizing a liquid stream which is at a temperature below its boiling point, feeding the pressurized liquid stream through an ejector to a lower pressure, conducting a stream of air and vapors of the liquid to the suction side of the ejector to form an admixture of liquid, liquid vapor and air, at a pressure intermediate the pressure of the streams fed to the ejector but adequate to condense the volatile liquid vapors to liquid, and gravity separating the volatile liquid, including condensed vapor, from the air.

3,778,970

ELECTROSTATIC AIR CLEANER

James A. Swimmer, Highland Park, and Martin Harris, Chicago, both of Ill., assignors to Air King Corporation, Chicago, Ill.

Filed June 11, 1971, Ser. No. 152,118
Int. Cl. B03c *3/08*
U.S. Cl. 55—137 3 Claims



An electronic air cleaner in which parallel collector plates are slidably and removably received by a frame member. An ionizing wire is strung in a generally zig-zag configuration to overlie and underlie each of the collector plates and the collector plates are engaged with a snug fit by electrical contact means which provide all of the collector plates with the same potential.

3,778,971
DEVICE FOR PURGING GAS FROM A LIQUID

Alain Granger, Lesigny, and Andre Sausse, Sceaux, both of France, assignors to Rhone-Poulenc S.A., Paris, France

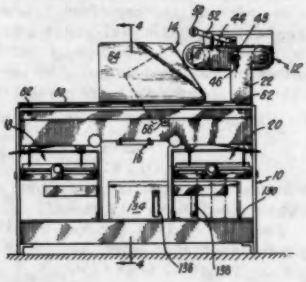
Filed Sept. 29, 1971, Ser. No. 184,890
Claims priority, application France, Sept. 29, 1970, 7035149
Int. Cl. B01d *19/00*
U.S. Cl. 55—159 2 Claims

A device for purging gas bubbles from a liquid in which a wall is arranged to form a passageway, at least half of the wall being in the form of a hydrophobic porous membrane having a pore size between 0.01 to 30μ. The liquid flows parallel to the membrane in a passageway between 0.5 and 10 mm maximum thickness and the gas escapes through the pores. The membrane may be formed into a tube and may act as a connector between two lengths of piping, the gas escaping between the ends of the piping. In another construction the device is in the form of a sachet having an intermediate impermeable wall, the liquid being caused to flow parallel to the sides of the wall of the sachet.

3,778,972
APPARATUS FOR HANDLING LIQUID FILLED FLEXIBLE POUCHES

Adam Chlipalski, 863 55th Ave., Lachine, Quebec, Canada

Filed Mar. 28, 1972, Ser. No. 238,873
Int. Cl. B65b *35/56*
U.S. Cl. 53—159 18 Claims



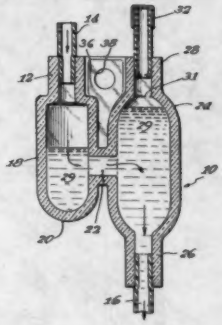
A liquid pouch handling apparatus which includes a pivoting cradle adapted to collect a plurality of pouches and then drop them into an outer bag held by a pair of oppositely pivoting jaws below the cradle, and sealing stations adjacent the path of the outer flexible bag and liquid filled pouches whereby tension fingers are included for engaging the open end of the outer bag and retaining it under tension while the top of the bag is being sealed by heat-sealing means.

3,778,973
BUBBLE TRAP FOR REMOVAL OF BUBBLES FROM BIOLOGICAL FLUIDS UNDER STERILE CONDITIONS

Felix Jesus Martinez, Palatine, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Dec. 23, 1971, Ser. No. 211,397
Int. Cl. B01d *19/00*
U.S. Cl. 55—199 8 Claims

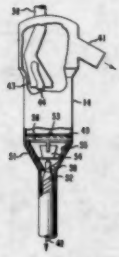
A bubble trap for liquid flowing in a conduit comprises an inlet port communicating with one end of a first chamber. The other end of the first chamber is closed, and a lateral port is defined in the side of the first chamber, communicating with the side of a second chamber between the ends thereof. The second chamber has an outlet port at an end opposite the inlet port, and a bubble collection port at an end adjacent the inlet port. The bubble collection port is closed with a resealable diaphragm, to permit the repeated aseptic insertion of a syringe to remove trapped gas.



3,778,974
APPARATUS

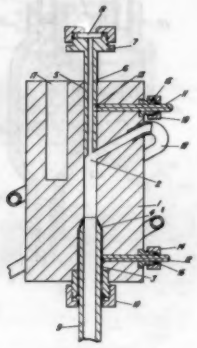
John M. Iwasyk, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1972, Ser. No. 299,092
Int. Cl. B01d *57/00*
U.S. Cl. 55—199 2 Claims



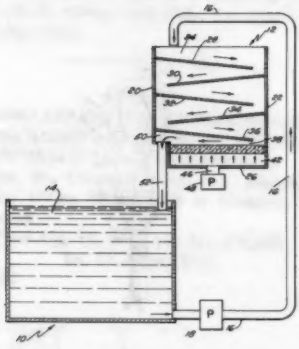
A steam polymer separator is provided that includes an upright tubular vessel having an outlet adjacent the bottom thereof, and a transfer screw with a shaft extending through the bottom of the separator. An open cage structure is attached to the top of the screw. In order to accentuate plug flow in the melt pool in the vessel, the cage structure is modified with a centrally positioned bottomless cup attached thereto. The size and shape of the cup are determined by formulae.

3,778,975
GAS CHROMATOGRAPHY
David Robert Deans, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Oct. 29, 1971, Ser. No. 193,708
Claims priority, application Great Britain, Nov. 9, 1970, 53,117/70
Int. Cl. B01d *15/08*; B21d *43/10*
U.S. Cl. 55—197 5 Claims



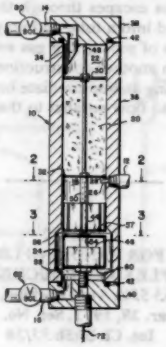
"Tailing" of peaks in gas chromatography is reduced by providing a bleed of gas through places in chromatographic apparatus which part of a sample may enter and thus be held up.

3,778,976
DEGASSING APPARATUS FOR A FISH AQUARIUM OR THE LIKE
Robert B. Pond, Mansfield, Mass., assignor to Atom Manufacturing Co., Inc., South Attleboro, Mass.
Filed Jan. 21, 1972, Ser. No. 219,679
Int. Cl. B01d *47/02*; E04h *3/20*
U.S. Cl. 55—206 5 Claims



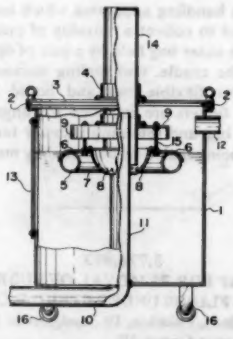
Degassing apparatus for a fish aquarium or the like comprising means for feeding the contaminated water from the aquarium to the upper end of the degasser housing, the housing having baffle means for causing the water to flow downwardly therethrough in a zigzag path and in a thinned-out state, until the water reaches a lower chamber, porous means such as an air stone forming the bottom of said lower chamber and defining the top wall of an air chamber located therebeneath, means for introducing air under pressure into said air chamber whereby said air is forced upwardly through the porous means to effect the desired gaseous exchange with the thinned-out water in order to reconstitute same, and means for recycling the reconstituted water back to the aquarium.

3,778,977
GAS INSTRUMENT LIQUID SEPARATOR
Alvie P. Conn, 7926 Ridgeview Dr., Houston, Tex.
Filed May 22, 1972, Ser. No. 255,437
Int. Cl. B01d *50/00*
U.S. Cl. 55—219 9 Claims



A separator for removing liquid hydrocarbons from a gas instrument line is disclosed. The miniature and compact separator utilizes impingement and centrifugal action for primary removal of entrained liquids, as well as a shredded coalescing material for further separation. The outlet chamber utilizes a probe to further prevent liquid carryover. Straightening vanes and a float chamber are provided for removal of the liquids.

3,778,978
DUST COLLECTOR
Masao Matsushita, Kuritagun, Japan, assignor to Matsushita Dendokogu Co., Ltd., Osaka City, Japan
Filed Nov. 30, 1971, Ser. No. 203,137
Claims priority, application Japan, Aug. 10, 1971, 46/71444
Int. Cl. B01d *47/02*
U.S. Cl. 55—223 1 Claim



A dust collector comprising a closed water tank and a floating member for receiving dusty air and blowing it into the water contained in a confined bowl-like depression formed in a base plate of the floating member so as to splash the water

upward to a tray placed above said bowl. By rebounding repeatedly between the tray and bowl, water screens are formed around dusty air and catch dusts which settle down at the bottom of the water tank.

3,778,979

METHOD OF AND APPARATUS FOR CLEANING GASES

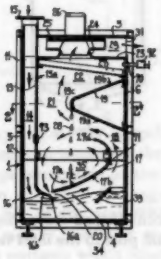
Gerard Friedling, Vernier, and Marcel Chuard, Meyrin, both of Switzerland, assignors to Technicair S.A., Chatelaine, Vernier, Switzerland

Filed Mar. 30, 1971, Ser. No. 129,447

Claims priority, application Switzerland, May 14, 1970, 7239/70

Int. Cl. B01d 47/02

U.S. Cl. 55—227 3 Claims



A method of cleaning gas contaminated by dust and like particles utilising an apparatus comprising a nozzle defined by a liquid surface and the surface of a wall and through which the gas is forced so that some of it takes up liquid, a channel extending downstream from said nozzle to a chamber formed above said wall and providing a turbulent zone in which the gas becomes wetted throughout, an opening being formed in the wall to communicate said chamber with the upper part of the nozzle whereby wetted gas is returned from the chamber to the upper part of the nozzle to wet that portion of the gas which passes through the nozzle without contacting the surface of the liquid.

3,778,980

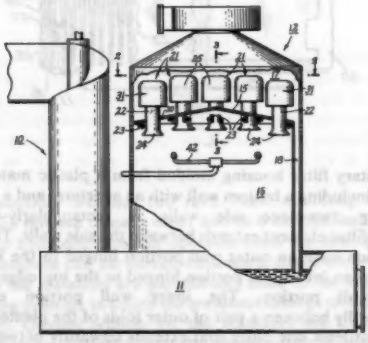
GAS DRYING APPARATUS

Carlo A. Vancini, Stamford, Conn., assignor to Peabody Engineering Corporation, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,664

Int. Cl. B01d 47/16

U.S. Cl. 55—238 4 Claims



Apparatus for removing suspended matter from gases including a transverse baffle plate having openings for the passage of gases and separating units in said openings including a central pipe through which the gases pass and having vanes to cause rotation of the gas stream for the centrifugal separation of the suspended matter. A cap registers with said pipe having a central opening through which cleaned gases pass and has a deflecting annular rim with a depending skirt for deflecting the gases with a reversal in direction around the outside of said pipe to remove suspended matter by impingement.

3,778,981

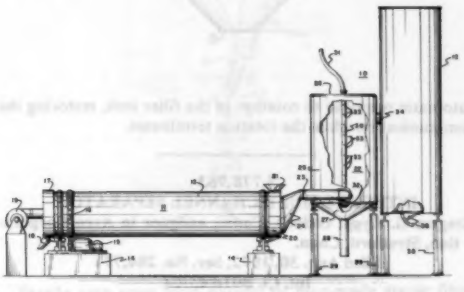
EXHAUST CLEANER

Samuel Scott Ross, 1570 Sunset Strip, Mountain Home, Idaho

Continuation-in-part of Ser. No. 202,291, Nov. 26, 1971. This application Mar. 21, 1973, Ser. No. 343,586

Int. Cl. B01d 47/06

U.S. Cl. 55—263 3 Claims



The exhaust cleaner comprises a steam scrubber in communication with a source of particulate aerosols through a duct which is disposed at a tangent to the lower portion of the steam scrubber, the steam scrubber including upstandingly disposed cylindrical walls, a flat horizontally disposed enclosure wall at the uppermost terminal end of the cylindrical walls, and downwardly projecting, substantially cone-shaped walls at the lowermost terminal end of the cylindrical walls; a dependently mounted steam conduit being supplied with steam under pressure from a suitable source and having a plurality of suitably disposed exitway holes; an exitway through which condensed water and particulates are discharged at the lowermost terminal end of the cone-shaped walls; and a heat exhaust duct discharging heated gases and the like into a suitable exhaust stack.

3,778,982

SCRUBBER FOR REMOVING PARTICULATE MATTER FROM GASEOUS FLUID

Gerhard Birke, Langenberg, Germany, assignor to Firma W. Ernst Haas & Sohn, Sinn/Dillkreis, Germany

Filed May 25, 1972, Ser. No. 256,914

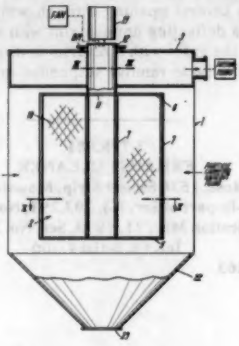
Claims priority, application Germany, May 28, 1971, P 21 26 594.1

Int. Cl. B01d 46/08

U.S. Cl. 55—290 10 Claims

A filter unit is interposed in the flow path of a stream of particle-gaseous fluid and can be rotated about an upright axis. The filter unit has a pair of vertically spaced plates connected by connecting elements about which a web of filter material is trained to surround an interior chamber. The gaseous fluid passes through the filter material into the interior of the chamber from which the now filtered gaseous fluid is withdrawn by a conduit normally in communication with the chamber and also in communication with a suction source. The particulate matter is retained at the exterior side of the web of filter material. The filter unit can be rotated about its upright axis to thereby eject the retained particulate matter by centrifugal force from the web of filter material, and a control

arrangement interrupts the communication between the filter chamber and the withdrawal conduit for filtered material in



automatic response to rotation of the filter unit, restoring the communication when the rotation terminates.

3,778,983

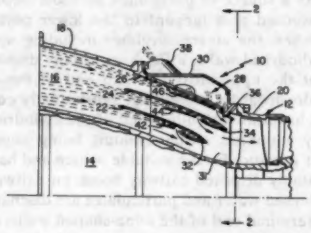
INTEGRAL MULTICHANNEL SEPARATOR

Gregers G. Rygg, Oxford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,771

Int. Cl. B01d *45/08*

U.S. Cl. 55—306 **7 Claims**



An integral multichannel separator for separating and removing foreign particles from engine inlet air is disclosed. The multichannel separator utilizes a plurality of concentric rings mounted in the air inlet passageway to divide the passageway into multiple flow paths. Each ring has a particle entrapping portion at the trailing edge. Each particle entrapping portion of the rings is connected with scavenge struts which support the rings as well as transport the particles for disposal. Deflector rings cooperate to prevent particle rebound into the main airstream.

3,778,984

GAS LIQUID SEPARATOR FOR USE IN A REFRIGERATION SYSTEM

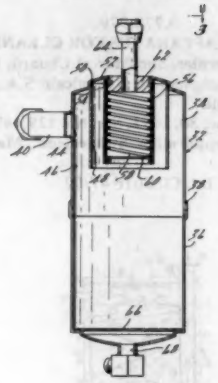
John J. Lawser, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1971, Ser. No. 120,147

Int. Cl. B01d *50/00*

U.S. Cl. 55—333 **1 Claim**

A gas liquid separator for use in a refrigeration circuit having a rotary compressor in which oil is mixed with refrigerant as the latter is circulated through the refrigeration cycle, said separator being situated between the compressor and the condenser portion of the cycle and including a swirl chamber for receiving the compressed refrigeration gas and oil mixture



whereby the oil is centrifuged from the gas, collected and returned through an oil port to the inlet side of the compressor for recycling.

3,778,985

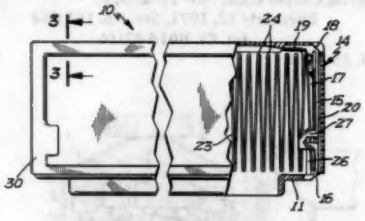
AIR CLEANER WITH FOLDING SIDE WALLS

Paul A. Daigle, Castle Rock, and Donald D. Gronholz, Bloomington, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Feb. 9, 1972, Ser. No. 224,748

Int. Cl. B01d *27/08*

U.S. Cl. 55—497 **5 Claims**



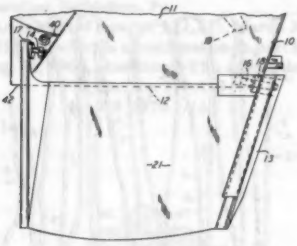
A unitary filter housing molded from a plastic material is shown, including a bottom wall with an aperture, and a pair of opposing, two-piece side walls. A rectangularly-shaped pleated filter element extends between the side walls. The side walls each have an outer wall portion hinged to the bottom wall, and an inner wall portion hinged to the top edge of the outer wall portion. The inner wall portion extends downwardly between a pair of outer folds of the pleated filter so that at least one outer fold extends upwardly between the wall portions. Hinged end walls are provided to seal the ends of the filter element and to aid in holding the side walls in position.

3,778,986

GRASS CATCHER BAG AND MOWER ASSEMBLY

Bruce C. Wright, Kansasville, and Donald G. Erickson, Racine, both of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed June 8, 1972, Ser. No. 260,917
Int. Cl. A01d 35/26
U.S. Cl. 56—202 7 Claims



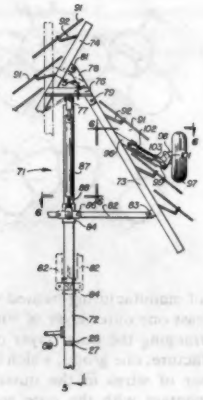
A grass catcher bag and mower assembly of a mower housing and a chute pivotally mounted on the housing and a grass catcher of the bag type mountable on the mower housing. The grass catcher has an extension for engaging the chute and pivoting the chute out of the way when the bag is being mounted onto the mower, and the mower and the grass catcher have mating portions which interengage for suspending the catcher on the mower.

3,778,987

WINDROW RAKE OPENING DEVICE AND ONE WHEEL TRACTOR

Everett V. Rankins, P.O. Box 132, Manteca, Calif.

Continuation-in-part of Ser. No. 51,597, July 1, 1970, Pat. No. 3,672,459. This application May 18, 1972, Ser. No. 254,730
Int. Cl. A01d 77/06
U.S. Cl. 56—377 8 Claims



A windrow rake has two rake wheel mounting members pivotted relative to each other and to a longitudinal beam so that by hydraulic controls operable from the towing vehicle the members can be moved between a transport position in which the members are parallel and close to the beam and a working position in which the members diverge outwardly forwardly. Ground wheels for the members are hydraulically turned automatically so that the wheels rotate in planes parallel to the direction of movement. The beam may be towed by a conventional tractor or by a one-wheel self-propelling attachment shown in copending U.S. application Ser. No. 51,597 filed July 1, 1970 which is now U.S. Pat. No. 3,672,459. Auxiliary retractable wheels may be mounted on said attachment to support it in upright position where not connected to the rake or other implement.

3,778,988

METHOD OF LAYING PROTRUDING FIBRES, AND INCREASING ABRASION RESISTANCE OF TEXTILE YARNS

Wilfred A. S. White, and Edgar R. West, both of Dundee, Scotland, assignors to Jute Industries Limited, Dundee, Scotland

Filed May 12, 1970, Ser. No. 36,634
Int. Cl. D01h
U.S. Cl. 57—12 12 Claims

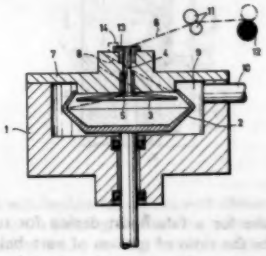
Textile yarn spun from natural or man-made staple fibres and of the kind, such for example, as jute, from which fibres usually protrude at random so that the yarn has an appearance of hairiness, has a fine wrapping material, for example nylon yarn or film in tape form, extending helically and externally thereof, by which fibres which would otherwise protrude from the yarn are laid along and anchored to the body of the latter, the abrasion resistance of the yarn is increasd and fibre loss in subsequent processing is decreased. The wrapping material is fed to the yarn during spinning in a spinning frame, as the yarn passes, while twisting, from the drawing rollers to the eye of the wharve of a spindle of the frame, so that the wrapping material becomes helically wrapped around the yarn externally.

3,778,989

APPARATUS FOR WITHDRAWING THREAD

Rudulf Schon, Stuttgart, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed June 20, 1972, Ser. No. 264,531
Claims priority, application Germany, June 21, 1971, P 21 30 724.4
Int. Cl. D01h 1/12
U.S. Cl. 57—58.89 10 Claims



A spindleless spinning machine having a rotatable spinning turbine and coaxial outlet by which the thread is withdrawn.

The device is provided with means having deflecting zones or surfaces, at the end of the outlet farthest from the turbine. This deflecting means is adjustable to selectively present one of a number of arrays and combination of deflecting surfaces to the thread, in order to obtain more selective results.

3,778,990

DEVICE FOR OPEN END SPINNING

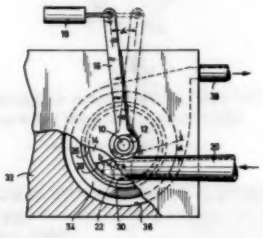
Gerhard Bartling, Burgstall, and Rudolf Schon, Stuttgart, both of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed June 20, 1972, Ser. No. 264,530

Claims priority, application Germany, June 21, 1971, P 21 30 738.0

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 11 Claims



Apparatus for spinning yarn provided with a cup shaped turbine, having an open end face and located within an enclosed housing. A feed tube mounted to impinge a fiber stream on to the inner wall of the turbine. A baffle is interposed between the feed tube and the turbine having a guide slot defined by at least one vertical wall, adapted to deflect the fiber stream. The baffle is rotatably mounted to adjust the wall relative to the fiber stream to thus vary the degree of deflection.

3,778,991

TWIST TUBE FOR A FALSE-TWIST DEVICE

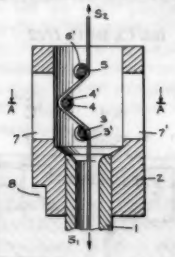
Josef Brummer, Wil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

Filed Jan. 31, 1972, Ser. No. 222,091

Claims priority, application Switzerland, Feb. 10, 1971, 1941/71

Int. Cl. D02g *1/06, 1/04*

U.S. Cl. 57—77.3 6 Claims



A twist tube for a false-twist device for texturing textile yarns wherein the ratio of tension of yarn being drawn from the tube to tension of yarn entering the tube is substantially reduced by providing at least three yarn deviation elements in the tube over which the yarn may pass, the elements being spaced in the direction of the longitudinal axis of the tube.

3,778,992

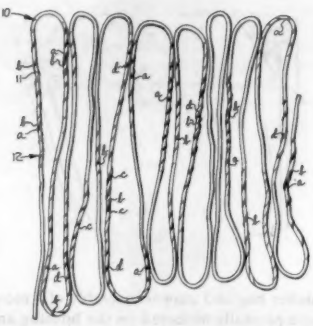
NOVELTY YARN

Johnathan L. Rhyne, Lincolnton, N.C., assignor to Paul C. Rhyne, Jr. and Joseph M. Rhyne, Jr., Lincolnton, N.C., part interest to each

Filed Dec. 8, 1971, Ser. No. 205,887

Int. Cl. D02g *3/34, 3/36*

U.S. Cl. 57—139 10 Claims



A novelty yarn formed of randomly arranged, pretwisted, relatively short, auxiliary strands spirally twisted around a ground strand of spun staple fibers.

3,778,993

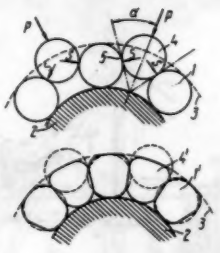
METHOD OF MANUFACTURING TWISTED WIRE PRODUCTS

Mikhail Fedorovich Glushko, prospekt Shevchenko, 15/5, kv. 17, and Viktor Klementievich Skalatsky, prospekt Gagarina, 2, kv. 21, both of Odessa, U.S.S.R.

Filed Dec. 7, 1971, Ser. No. 205,664

Int. Cl. D07b *1/06*

U.S. Cl. 57—145 3 Claims



A method of manufacturing twisted wire products having a core and at least one outer layer of wires laid about the core consists in arranging the outer layer of wires in two groups during manufacture; one group, which is a substantial fraction of the number of wires in the outer layer is twisted and disposed in contact with the core so as to form as many peripheral gaps as there are remaining wires other than those in the fraction; the second group of wires which are the remaining wires are disposed in peripheal gaps so formed, and laid radially away from the core and in contact with adjacent wires of the first group; the outer layer so arranged in two groups is subjected to radially compressive deforming forces so as to wedge the conductors of the second group into the peripheral gaps so as to produce a tight and improved twisted wire product. Circular wires of the same diameter may be used for the core and the outer layer. Twisted wire products having a plurality of outer layers may be produced by forming single outer layers as said and building them in suc-

cession; alternatively, the product may be formed in a single stage of plastic deformation and subsequent thermal treatment as required. The core may be of circular, oval, oblong or triangular shape.

3,778,994

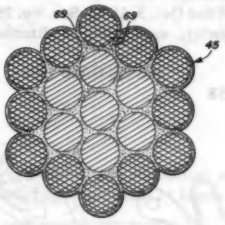
CORROSION RESISTANT WIRE ROPE AND STRAND

Darral V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 112,211, March 30, 1971, Pat. No. 3,681,911, which is a continuation-in-part of Ser. No. 850,148, Aug. 14, 1969, abandoned. This application Aug. 9, 1972, Ser. No. 278,413

Int. Cl. D07b *1/16*

U.S. Cl. 57—149 15 Claims



A wire rope or strand is provided with a plastic foam type internal sealant and corrosion resistant outer strands or wires to provide superior corrosion resistance at low cost for wire strands and ropes requiring a bare metal surface.

3,778,995

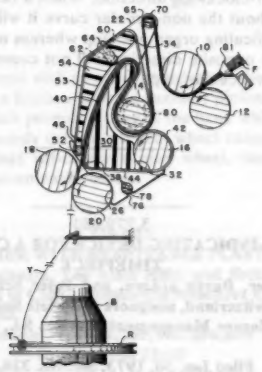
DRAFTING METHOD

Grady H. Sanders, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 9, 1971, Ser. No. 179,022

Int. Cl. D02g *3/00*; D01h *5/00*

U.S. Cl. 57—156 1 Claim



Method of drafting sliver which has at least some of the staple fibers therein longer than the distance between center lines of adjacent pairs of rolls in a drafting system.

3,778,996

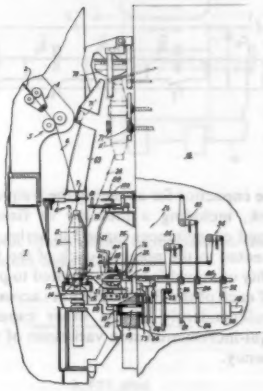
METHOD FOR DOFFING A BOBBIN AND FORMING A TRANSFER TAIL

Raymond E. Olson, and Harold R. Yone, both of Rockford, Ill., assignors to Barber-Coleman Company, Rockford, Ill.

Division of Ser. No. 67,367, Aug. 27, 1970, Pat. No. 3,696,602. This application Apr. 13, 1972, Ser. No. 243,655

Int. Cl. D01h *9/10*

U.S. Cl. 57—156 5 Claims



A method for simultaneously removing a filled bobbin and its trailing bobbin thread from a spindle in a single operation, winding a new transfer tail on the spindle, and then severing the thread between the spindle and bobbin.

3,778,997

CLOCKWORK MECHANISM FOR LARGE CLOCKS

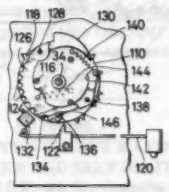
Heinz Jauch, Villingen-Schwenningen, Germany, assignor to Erhard Jauch, Uhrenfabrik, Villingen-Schwenningen, Stadtbezirk Schwenningen, Switzerland

Filed Feb. 24, 1972, Ser. No. 229,091

Claims priority, application Germany, Feb. 26, 1971, P 21 09 138.3

Int. Cl. G04b *21/04*

U.S. Cl. 58—13 12 Claims



A clockwork mechanism for clocks with chimes comprising a clock movement, a striking mechanism, a control device for the striking mechanism, a driving motor for driving the striking mechanism and a set of batteries for the driving motor all constituted as seperate units mounted in the housing of the clock. At least the motor and batteries are detachably mounted for each replacement.

3,778,998

VARIABLE CAPACITOR FOR ADJUSTING THE FREQUENCY OF A QUARTZ-CRYSTAL CLOCK

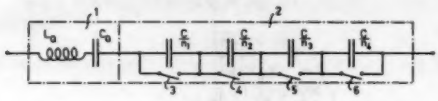
Jean-Claude Berney, Lausanne, Switzerland, assignor to Bernard Golay S.A., Lausanne, Switzerland

Filed May 2, 1972, Ser. No. 249,495

Claims priority, application Switzerland, May 14, 1971, 7083/71

Int. Cl. G04c *3/00*

U.S. Cl. 58—23 AO **5 Claims**



A variable capacitor for adjusting the frequency of a quartz-crystal clock, including a plurality of fixed capacitors of predetermined capacitances tapped in series, conductive elements connected to the poles of each of the fixed capacitors, and a plurality of movable blades adapted to provide for short-circuiting of each of the fixed capacitors across the conductive elements independently of the other capacitors so as to facilitate equi-incremental step variations of the quartz oscillation frequency.

3,778,999

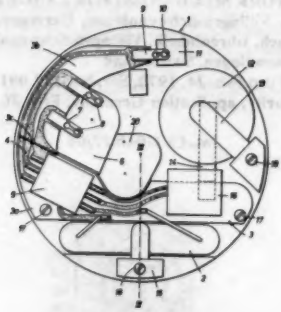
ELECTRONIC WRISTWATCH

Georges C. Vuffray, La Chaux-de-Fonds, Switzerland, assignor to Girard-Perregaux SA, La Chaux-de-Fonds, Switzerland

Filed Dec. 13, 1972, Ser. No. 314,670

Int. Cl. G04c *3/00*; G04b *37/00*

U.S. Cl. 58—23 R **11 Claims**



An electronic wristwatch having a printed circuit which is flexible in part and reinforced in part. An integrated circuit is mounted on the reinforced part while a motor, which drives the hands of the watch, is connected to the flexible part. The flexible part has clamps which extend therefrom and cooperate with conductive studs located on the motor to connect the motor to the integrated circuit. Also, the flexible part and the reinforced part lie in different planes with a permanent fold connecting the two planes. At the fold copper conductive paths lying on a flexible insulating support have a cross-section, as compared with the cross-section of the insulating support, such that the malleability of the copper assures the permanence of the fold. A frequency standard element located near the reinforced part of the printed circuit is connected to the integrated circuit by flexible conductors to limit mechanical coupling.

3,779,000

CORRECTION DEVICE FOR DAY-AND-DATE CALENDAR WATCHES

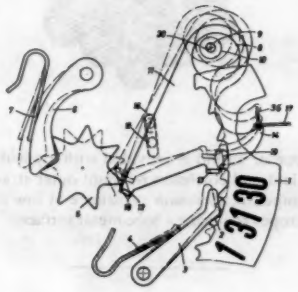
Peter Schmid, Diessbach b. Bueren, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services SA, Bienne, Switzerland

Filed Oct. 3, 1972, Ser. No. 294,507

Claims priority, application Switzerland, Oct. 6, 1971, 14542/71

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **6 Claims**



A correction mechanism for a calendar watch which connects a control organ such as the winding stem of the watch to first and second indicating organs such as day and date indicators. The correction mechanism comprises a driving organ which is one element of a jointed system with four joints. The driving organ has two drive beaks associated, respectively, with the first and second indicating organs. The beaks move together in a non-circular, closed curve in which one beak moves in a clockwise direction while the other beak is moving in a counter-clockwise direction. When a beak moves in one direction about the non-circular curve it will advance its associated indicating organ one step whereas movement of that beak in the opposite direction will not cause such indicating organ to advance one step.

3,779,001

DATE-INDICATING DEVICE FOR A CALENDAR TIMEPIECE

Hans Kocher, Buren a/Aare, and Peter Schmid, Diessbach, both of Switzerland, assignors to Societe Suisse pour l'Industries Horlogere Management Services SA, Bienne, Switzerland

Filed Jan. 30, 1973, Ser. No. 328,122

Claims priority, application Switzerland, Feb. 9, 1972, 1829/72

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **12 Claims**

Date-indicating device for a calendar timepiece comprising

two concentric rings, the inner ring containing tens digits and the outer ring containing units digits, both rings driven in a rotary movement only or a rotary and translatory movement by driving elements on a linkage once each 24 hours.

3,779,002

WATCH MOVEMENT WITH OFF-CENTER CENTER WHEEL AND PINION

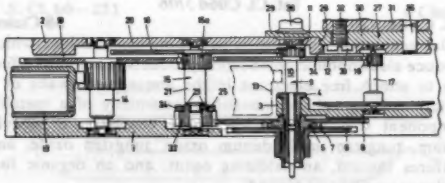
Roland Zaugg, Grenchen, Switzerland, assignor to A. Schild S.A., Grenchen, Switzerland

Filed Jan. 29, 1973, Ser. No. 327,428

Claims priority, application Switzerland, Jan. 27, 1972, 1213/72

Int. Cl. G04b *33/00*

U.S. Cl. 58—59 **4 Claims**



Watch movement with an off-center center wheel driving a third wheel with a friction-coupled auxiliary pinion driving the minute hand which permits setting of the hand while the third wheel is continuously driven, a fourth wheel extending at the same level as said off-center center wheel, resulting in a thinner watch movement structure.

3,779,003

CABLE CARRIER WITH REMOVABLE PLASTIC LINKS

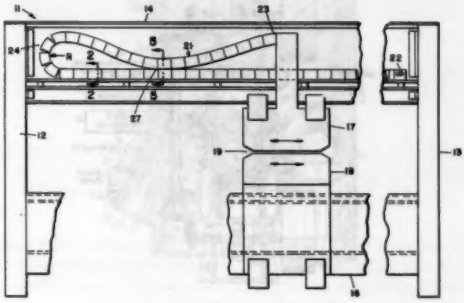
Mathew G. Boissevain, Los Altos Hills, and Erik B. Dahlin, Saratoga, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed Sept. 7, 1972, Ser. No. 286,853

Int. Cl. F16g *13/02*

U.S. Cl. 59—78.1 **9 Claims**

A cable carrier consisting of a chain with a plurality of links for conveying electric power, water, etc. to the point of application on equipment-in-motion in which each links consists essentially of plastic and includes U-shaped base and U-shaped cover. The cover has a width less than the distance between the pivot axes on the base to allow for sag in the carrier to thus allow a long length carrier to be used. On the other hand, a fixed radius of curvature is provided so that the cable which is carried is not bent excessively.



3,779,004

FUSIBLE LINK

Fred A. Gloeckler, Huntington Valley, Pa., assignor to Star Sprinkler Corporation of Florida, Philadelphia, Pa.

Filed Sept. 12, 1972, Ser. No. 288,280

Int. Cl. F16g *15/00*

U.S. Cl. 59—93 **7 Claims**

A fusible link is provided suitable for use for controlling a weight release, for a door closer or for a sprinkler, which can be used in tension or compression, and which includes two link elements one interengaged with the other and held against movement by a transverse fusible temperature responsive retainer.

3,779,005

TURBOCHARGED PISTON ENGINE HAVING IMPROVED ECONOMIZER AND SELF IGNITION

George C. Sorensen, 589 S.E. 4th St., Ontario, Oreg.

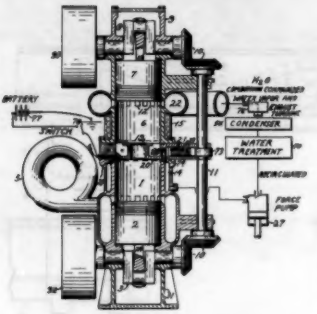
Continuation-in-part of Ser. No. 800,200, Feb. 18, 1969, abandoned. This application May 10, 1971, Ser. No. 141,868

Int. Cl. F02b *9/00*

U.S. Cl. 60—11 **1 Claim**

A conventional turbocharged internal combustion engine of either 2 stroke cycle or 4 stroke cycle having auxiliary mechanism adapted to capture hot products of combustion or exhaust gas and by compression elevated heat provides ignition, superheated steam expansion energy and includes an ex-

haust turbine for utilization of powerful blowdown energy and by great reduction of final exhaust temperature facilitates condensation of combustion compounded water for recirculation through an included water reclamation and combustion cooling system.



3,779,006

FLAME SHIELD FOR A GAS TURBINE ENGINE

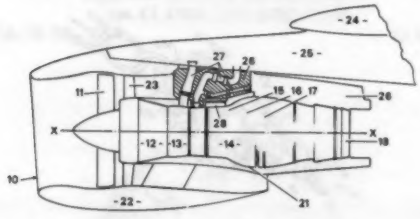
Brynley Lewis, Nottingham; George Langham Miller, Spondon; Kenneth John Brooks, Nottingham, and Arthur George Goss, Derby, all of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 4, 1971, Ser. No. 195,612

Claims priority, application Great Britain, Nov. 30, 1970, 56,738/70

Int. Cl. F02g *3/02*; F16p *1/02*

U.S. Cl. 60—39.11 **11 Claims**



A flame shield for a gas turbine engine comprises a sheet of refractory metal, preferably tantalum, having at least on the side subject to flame attack a material which prevents oxidation of the sheet and on the other side an insulating layer. The flame shield is so positioned and so dimensioned that in the event of failure of the combustion equipment of a gas turbine engine in an aircraft, any flame issuing therefrom is prevented from coming into contact with other parts of the engine or the aircraft fuselage for a predetermined length of time.

3,779,007

FUEL DELIVERY AND CONTROL SYSTEM FOR A GAS TURBINE ENGINE

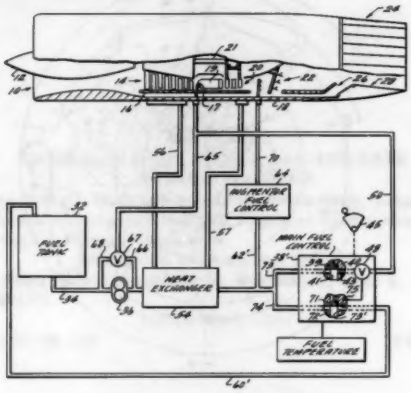
John Paul Lavash, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

Filed Apr. 28, 1972, Ser. No. 248,694

Int. Cl. F02c *9/10*

U.S. Cl. 60—39.28 R **5 Claims**

A fuel delivery and control system is provided for use with a gas turbine engine and includes a fuel-oil heat exchanger for reducing engine oil temperature wherein a minimum rate of fuel flow is maintained through the heat exchanger and main fuel control by including a second recirculating valve in parallel flow connection to the fuel control metering valve. The recirculating valve is arranged to automatically open and close as a function of fuel temperature, metering valve position and in-flight engine fuel shutoff.



3,779,008

ELECTROPHILLIC GAS GENERATING COMPOSITIONS AND PROCESS

Charles B. Henderson, Alexandria, and Richard F. Hoglund, Reston, both of Va., assignors to Atlantic Research Corporation, Alexandria, Va.

Filed Dec. 15, 1970, Ser. No. 98,453

Int. Cl. C06d *5/06*

U.S. Cl. 60—207 **38 Claims**

Gas-generating, combustion-sustaining compositions, which produce electrophillic combustion products in amounts effective to attach free electrons in the atmospheric wake of a rapidly moving vehicle, consisting essentially of a metallic component selected from the group consisting of molybdenum, tungsten, molybdenum oxide, tungsten oxide, and mixtures thereof, an oxidizing agent, and an organic fuel binder as required or desired.

Process for removing free electrons from the atmospheric wake of a rapidly moving vehicle comprising injecting into said wake the combustion products of the aforedescribed gas-generating, combustion-sustaining compositions.

3,779,009

CATALYTIC METHOD OF PRODUCING HIGH TEMPERATURE GASES

Joseph Friedman, Encino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 503,442, Oct. 23, 1965, abandoned. This application Nov. 4, 1968, Ser. No. 772,985

Int. Cl. C06d *5/08*

U.S. Cl. 60—217 **8 Claims**

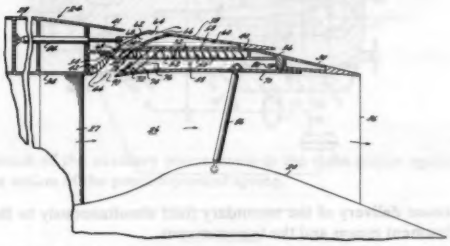
A system for providing high temperature gases comprising a single storage tank containing a nondetonable mixture of an inert gas, an oxidizer and a fuel. A catalytic bed is functionally connected therewith whereby the oxidizer and fuel are ignited by the catalytic bed, producing hot gases.

3,779,010

COMBINED THRUST REVERSING AND THROAT VARYING MECHANISM FOR A GAS TURBINE ENGINE

Anthony Joseph Chamay, Marblehead, and Richard Paul Johnston, Peabody, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Aug. 17, 1972, Ser. No. 281,478
Int. Cl. F02k 3/04
U.S. Cl. 60—226 A 7 Claims



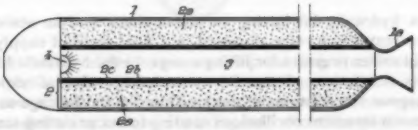
A thrust reversing mechanism for reversing the flow through either the exhaust nozzle or fan duct of a jet propulsion powerplant is further modified to include apparatus for varying the throat area of the exhaust nozzle or fan duct as a means of optimizing powerplant efficiency throughout its operating range.

3,779,011

FUEL UNIT FOR A HYBRID HOT-GAS GENERATOR

Claude H. Verdier, Neauphle-le-Chateau, France, assignor to Office Nationale d'Etudes et de Recherches Aerospatiales, Chatillon-sous-Bagneux and Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale, Delegation Ministerielle pour l'Armement, Direction des Poudres, Paris, France

Filed July 19, 1971, Ser. No. 163,987
Claims priority, application France, July 22, 1970, 7027104
Int. Cl. F02k 9/00
U.S. Cl. 60—251 6 Claims



A fuel unit for a hybrid hot-gas generator comprises two consumable constituent parts of different compositions which are separated by a partition which in storage conditions is stable and chemical inert with respect to said two parts and which is consumable during operation of the generator. Reactions between said constituent parts during storage, which might impair the combustion of the fuel unit, are thereby prevented.

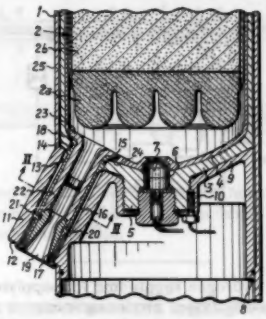
3,779,012

ROCKET ENGINE

Xaver Suter, Thalwil, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed May 17, 1972, Ser. No. 254,083
Claims priority, application Switzerland, May 27, 1971, 7753/71
Int. Cl. F02k 1/00, 9/02
U.S. Cl. 60—271 4 Claims

A rocket engine incorporating an extrusion molded-combustion chamber having a domed chamber floor with a substantially central cylindrical projection. A nozzle is retained in a bore at the combustion chamber floor. The bore is arranged



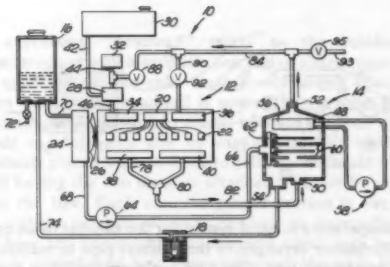
eccentrically at the combustion chamber floor and a holding body means is secured to the central projection and serves to fix the nozzle in desired direction.

3,779,013

CLOSED SYSTEM INTERNAL COMBUSTION ENGINE

George E. Faber, Los Angeles, and Frank F. Kates, Thousand Oaks, both of Calif., assignors to Krun Corporation, Santa Fe Springs, Calif.

Continuation-in-part of Ser. No. 161,820, July 12, 1971, abandoned. This application Oct. 30, 1972, Ser. No. 302,169
Int. Cl. F02b 75/10; F02n 25/06
U.S. Cl. 60—278 13 Claims



The exhaust gases from an internal combustion engine which is using gasoline and air as fuel, are passed through a catalytic condenser for converting and/or condensing the products of combustion into various liquids and solids which are removed from the condenser, with the remaining and/or newly formed gases being recycled to the cylinders of the engine for further combustion and/or conversion. The system is operable fully closed with no gaseous exhaust to the atmosphere, with the solids from the condenser being removed by means of a filter, and with the liquids being received in a storage tank.

3,779,014

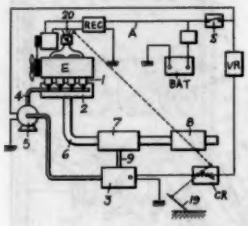
EXHAUST EMISSION CONTROL DEVICE

Hidetaka Nohira, and Masaru Kokokawa, both of Susono City, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Toyota City, Japan

Filed Oct. 14, 1971, Ser. No. 189,267
Claims priority, application Japan, May 26, 1971, 46/35983
Int. Cl. F01n 3/16; F02b 75/10
U.S. Cl. 60—286 3 Claims

An exhaust emission control device comprising a hydrogen producing means, a control means for effecting control of the

quantity of hydrogen produced by said hydrogen producing means in accord with the production of exhaust gases of combustion, and a hydrogen supply line for supplying hydrogen produced by said hydrogen producing means to an oxides of nitrogen reductive reaction chamber.

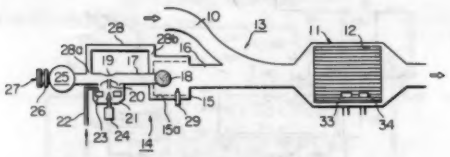


3,779,015

EXHAUST GAS TREATING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Feb. 8, 1972, Ser. No. 224,518
Claims priority, application Japan, Aug. 17, 1971, 46/62454
Int. Cl. F01n *3/14*
U.S. Cl. 60—286 **4 Claims**



A temperature control system for the catalyst of an exhaust gas afterburner arranged in the exhaust pipe to maintain the reaction temperature within an optimum oxidizing range by blowing heated air through the afterburner when the temperature is below the optimum range and by blowing cool air through the afterburner when the temperature is above the optimum range. Heated air is obtained by burning an air-fuel mixture in a chamber communicating with the exhaust pipe upstream of the afterburner.

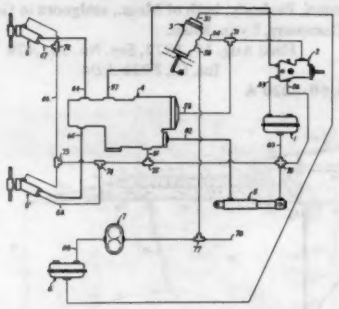
3,779,016

APPARATUS FOR CONTROL OF HYDRAULIC CIRCUITS

Oldrich Ryc, Pribor, Czechoslovakia, assignor to TAIRA, narodni podnik, Koprivince, Czechoslovakia

Filed Apr. 17, 1972, Ser. No. 244,662
Int. Cl. F15b *11/16*
U.S. Cl. 60—329 **10 Claims**

A system for controlling a pair of hydraulic motor circuits, comprising a source of primary fluid, first conduit means including a valve having hydraulically actuable bypass means for delivering primary fluid to one or both of the said motor circuits. A hydraulic adjustable pump is interposed between the source of primary fluid and the valve. A secondary fluid system including second conduit means having a thermo valve is provided. The thermo valve is responsive to a predetermined level of heat generated by the operation of the motors to cause delivery of the secondary fluid simultaneously to the adjustment means and the bypass means.

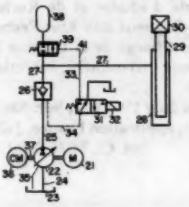


3,779,017

HYDRAULIC LIFT

Fumio Fujisawa, Mito-shi; Mitsuaki Takenoshita; Ichiro Nakamura, and Hiroshi Yumino, all of Katsuta-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,833
Claims priority, application Japan, Sept. 17, 1971, 46/71800
Int. Cl. F15b *1/02*
U.S. Cl. 60—413 **5 Claims**



A hydraulic lift having an accumulator and an associated flow restricting valve disposed in a fluid conduit supplying a fluid under pressure for lifting a cage. In the hydraulic lift, the flow restriction of the flow restricting valve is varied in response to variations in the load carried by the cage so as to prevent transient oscillations tending to occur during starting, deceleration and stoppage of the cage.

3,779,018

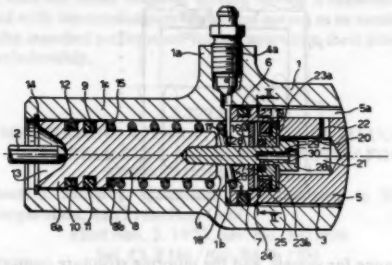
MASTER CYLINDERS

Philip Sidney Baldwin, Florence, Italy, assignor to FIAT Societa per Azioni, Turin, Italy; a part interest

Filed Mar. 15, 1972, Ser. No. 234,837
Claims priority, application Italy, Mar. 27, 1971, 68038 A/71
Int. Cl. F15b *7/08*
U.S. Cl. 60—575 **5 Claims**

The invention relates to a master cylinder for a hydraulic fluid system such as the hydraulic braking system of a motor vehicle. The cylinder has a main piston and an auxiliary piston between which there is a precompressed spring which transmits movement of the auxiliary piston, caused by its engagement with a push rod operated by the brake pedal, to the main piston. The main piston has two passageways by means of which the space between the main and auxiliary pistons can communicate with a reservoir of hydraulic fluid for the circuit. One of the passageways is controlled by a valve which closes under the action of a flow of fluid from the said space toward

the reservoir, and the other is controlled by a valve, linked to the auxiliary piston, which is closed after a predetermined approach of the auxiliary piston towards the main piston against the action of the precompressed spring.

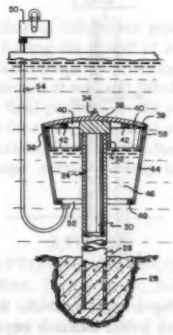


3,779,019

PROTECTION AGAINST SHEET ICE AT AN OFFSHORE STRUCTURE

Ivo C. Pogonowski, and Paul D. Carmichael, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 10, 1971, Ser. No. 179,387
Int. Cl. E02b *3/00, 15/00*
U.S. Cl. 61—1 5 Claims



The invention relates to means for protecting a stationary marine platform or structure from the contingency of damage due to contact with moving sheet ice. One or more submerged sheet ice shattering members are disposed about the platform at appropriate intervals and anchored to the ocean floor. Each of said members comprises a vertically movable, fluid actuated fracturing cap. Said cap is slidably positioned on a guide pile or the like whereby to permit controlled vertical reciprocatory movement of the cap to be periodically urged into contact with the underside of an ice sheet. The resulting stress induced in the ice will cause the latter to yield and shatter into smaller, less harmful pieces.

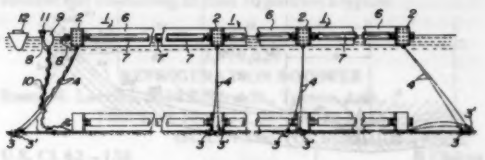
3,779,020

IMMERSIBLE OIL FENCE ASSEMBLY

Tateo Muramatsu, and Kuninori Aramaki, both of Yokohama City, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 14, 1972, Ser. No. 234,579
Claims priority, application Japan, Mar. 20, 1971, 46/15685
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F 12 Claims

An immersible oil fence assembly including alternately connected oil fence units and immersible buoys. The oil fence units have tubular float means connected to inflatable bags of the immersible buoys. By inflating and deflating the tubular float means and the inflatable bags, the oil fence is selectively floated and immersed. The buoys are anchored to station the oil fence assembly in position.

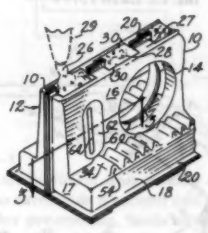


3,779,021

METHOD OF MAKING A HEADWALL

Robert H. Green, 550 High Point Ln., N.E., Atlanta, Ga.

Filed Dec. 27, 1971, Ser. No. 212,217
Int. Cl. E02d *5/20*
U.S. Cl. 61—16 5 Claims



The expression "headwall" refers to the reinforced concrete structure which supports one end of a large pipe and retains earth fill on one side. Instead of building concrete forms on the site the headwall is poured into a form made from two identical lightweight plastic concave sections which are made to shape and size by vacuum forming identical plastic sheets placed back-to-back to produce the mold which is a shell having the two sections attached together by plastic strips or the like. Each concave plastic section is vacuum formed with an intricate shape to produce an outwardly extending base and an upright retaining wall which may have a circular or oval-shaped hole passing through the walls to accommodate the drainage pipe. The plastic walls around the hole may be weak so as to distort around the pipe or may be split. The completed form has openings at the top through which concrete is poured. The bottom may be open so that concrete can come into contact with the irregular terrain or soil.

3,779,022

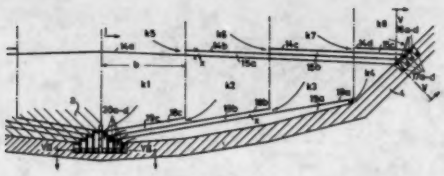
DAM HAVING AN INTERNAL APRON AND MEANS FOR INDICATING LEAKAGE OF APRON

Alfred Feiner, Porz-Westhoven, Germany, assignor to Strabag Bau-A.G., Cologne-Deutz, Germany

Filed Feb. 24, 1972, Ser. No. 228,865
Claims priority, application Germany, Mar. 9, 1971, P 21 11 034.9
Int. Cl. E02b *7/04*
U.S. Cl. 61—31 23 Claims

A dam having a core packing providing a sealing apron, laterally supported by upstream and downstream embankments, and vertically supported by a foundation toe wall, is provided with means for detecting the location of leaks in the sealing apron. A filter wall vertically supported by the toe wall is laminated with the core packing, for receiving leakage of the core packing at about the location where leakage occurs.

A plurality of leakage water collectors are disposed in the toe wall, and the collectors are communicated, respectively, with



different sections of the filter wall. The location of leaks can be detected by observation of water received at the collectors.

3,779,023

SHIELD ROOF SUPPORT

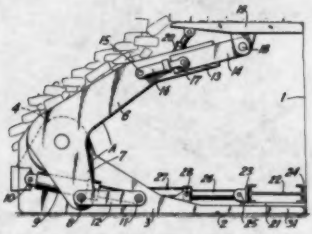
Manfred Koppers, Duisburg-Hamborn, Germany, assignor to Rheinstahl AG, Essen, Germany

Filed June 23, 1972, Ser. No. 265,489

Claims priority, application Germany, Dec. 1, 1971, P 21 59 535.7

Int. Cl. E21d *15/44*

U.S. Cl. 61—45 D 10 Claims



A shield roof support has a sole plate, at least one roof or heel plate and a hydraulic element supporting the roof plate from the sole plate. The hydraulic supporting element includes a piston-cylinder actuator mounted inside the sole plate and extending along the longitudinal axis thereof, the movable element of the actuator being connected to one arm of an angle lever pivoted on a horizontal axis on the sole plate and having its other arm pivotally connected to the roof plate, the angle between the two arms of the lever preferably being adjustable. The lever transforms the force-action line of the actuator from the horizontal direction to the vertical direction. Thrust means on the longer arm of the lever are pivotally connected to the roof plate at a fulcrum, and a locking actuator is interconnected between the roof plate and the longer arm of the lever. A second piston-cylinder actuator extending longitudinally of the sole plate is operable to advance the sole plate relative to the working face of a mining operation, for example.

3,779,024

STATIONARY STORAGE AND MOORING PLANT RESTING ON THE BOTTOM OF THE SEA

Gottfred Greve, Oslo, Norway, assignor to A/S Hoyer-Ellefsen, Oslo, Norway

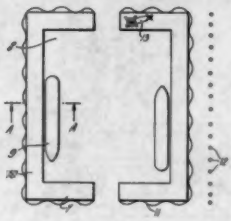
Filed June 21, 1971, Ser. No. 155,136

Claims priority, application Norway, June 23, 1970, 2442/70

Int. Cl. E02b *17/00*; E02d *5/00*; B63b *35/02*

U.S. Cl. 61—46 11 Claims

A stationary plant for servicing ships comprises a mooring structure resting on the bottom of the sea and projecting upwardly above the surface of the sea. The mooring structure extends around a central area to generally enclose that area to form a generally enclosed sheltered harbour having at least



one entrance for vessels, and the mooring structure comprises at least one hollow water-tight caisson capable of storing a liquid such as oil, gas or the like.

3,779,025

PILE INSTALLATION

Augustus P. Godley, Hohokus, and William E. Kruse, Plainfield, both of N.J., assignors to Raymond International, Inc., New York, N.Y.

Filed Oct. 7, 1971, Ser. No. 187,289

Int. Cl. E02d *5/00*, *5/20*

U.S. Cl. 61—53.52 13 Claims

Piles are installed by driving a tubular lower pile shell section into the ground to a first location beyond which the shell section refuses to penetrate, thereafter, filling the shell with concrete, allowing the concrete to harden and stiffen the shell, and thereafter continuing to drive the concreted shell down to a final bearing depth substantially beyond the first location.

3,779,026

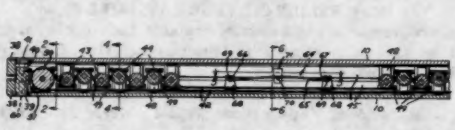
EXPANSIBLE MANDREL EMPLOYING LEAF SPRINGS TO BIAS ITS SECTIONS INTO ITS PILE ENTERING RELATIONSHIP

Charles L. Guild, 7 Stone Tower Ln., Barrington, R.I., and Willard B. Goodman, P.O. Box No. 62, Newport, Oreg.

Filed Apr. 3, 1972, Ser. No. 240,381

Int. Cl. E02d *7/30*

U.S. Cl. 61—53.72 12 Claims



An expansible mandrel is disclosed of the type provided with power operated means by which the mandrel sections are forced into their pile-gripping relationship and with means

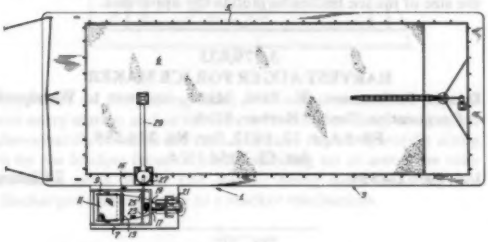
resiliently biasing the sections towards their pile-entering relationship, each in the form of a leaf spring extending lengthwise of the mandrel and connected at its ends to one mandrel section with the other mandrel section having a member so engaged with the central part of the leaf spring as to tension it as the the mandrel sections are forced apart into their pile-entering relationship.

3,779,027

METHOD AND APPARATUS FOR A CONTINUOUS DUMBBELL TUBE ANCHORING SYSTEM FOR SUBMARINE PIPELINES

Emmett J. Murphy, Woodside, Calif., assignor to Marcona Corporation, San Francisco, Calif.

Filed Nov. 2, 1972, Ser. No. 302,995
Int. Cl. F16l *1/00*; B65b *1/06*
U.S. Cl. 61—72.1 14 Claims



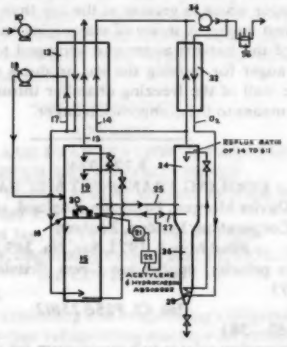
A system for anchoring submarine pipelines by forming a continuous anchor having the shape of a dumbbell tube and constructed from an elongated envelope of plastic filter material which is seamed at sea and filled with ballast during its installation at its final position on the sea bottom. Alternatively, the dumbbell tube may be formed and filled with ballast and be installed continuously and simultaneously with the installation of the pipe sections comprising the submarine pipeline.

3,779,028

IMPROVED KRYPTON XENON RECOVERY METHOD

Paul Maurice Schuftan, Twickenham; John Walter Armond, Great Brookham; John Henry Leader, Cheshunt, and George James Davis, Enfield, all of England, assignors to The British Oxygen Company Limited, London, England

Filed Oct. 8, 1971, Ser. No. 187,907
Claims priority, application Great Britain, Oct. 12, 1970, 48,402/70
Int. Cl. F25j *3/04*, *3/02*
U.S. Cl. 62—22 14 Claims



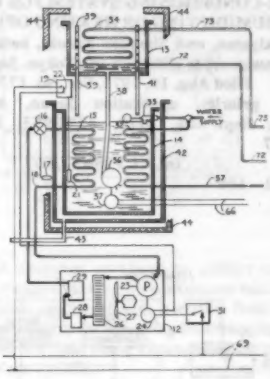
Krypton and xenon are recovered from the oxygen produced in the reboiler of an air separation unit by passing the oxygen into a two-section rectification column having at least one reboiler and in which the reflux ratio is selected to give a primary krypton/xenon concentrate of low methane content and containing at least 10 percent krypton.

3,779,029

REFRIGERATION BOOSTER

Raoul M. Larriva, 5020 E. First St., Tucson, Ariz.

Filed June 16, 1972, Ser. No. 263,456
Int. Cl. F25c *1/12*
U.S. Cl. 62—138 8 Claims



An auxiliary refrigeration unit cooling coil is immersed in water which also surrounds a second coil. The latter contains water which, after pre-cooling, feeds an ice-making machine, thus increasing the thermal effectiveness of the latter. A third coil, also immersed in the water, contains refrigerant and is connected between the ice maker compressor and its condenser, thus again increasing the thermal effectiveness of the ice maker.

In one embodiment the first and second coils are in a lower tank while the third coil is in an upper tank, with water circulation between the two tanks.

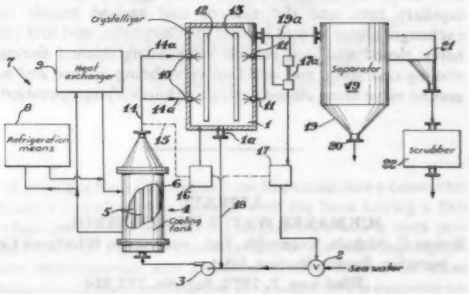
In a second embodiment all three coils are in one tank.

3,779,030

METHOD OF MAKING SODIUM CHLORIDE CONCENTRATE FROM SEA WATER

John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1971, Ser. No. 203,730
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 6 Claims



A continuous method of producing a sodium chloride concentrate from sea water which comprises initially seeding sea

water with sodium chloride, cooling this admixture to approximately the eutectic temperature of the sodium chloride solution and separating the ice crystals that form from the residual sodium chloride concentrate; thereafter a portion of the remaining sodium chloride concentrate is added to fresh sea water, and the process is repeated. This continuous process thereby yields a sodium chloride concentrate and ice.

3,779,031

AIR-CONDITIONING SYSTEM FOR COOLING DEHUMIDIFYING OR HEATING OPERATIONS

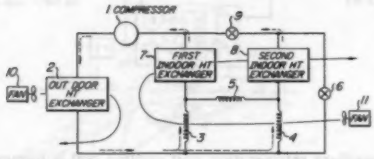
Mitsuo Akiyama, and Sigeyasu Suzuki, both of Tochigi-ken, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1971, Ser. No. 173,037

Claims priority, application Japan, Aug. 21, 1970, 45/82845; Sept. 24, 1970, 45/93953; Dec. 23, 1970, 45/128957

Int. Cl. F25b *13/00*

U.S. Cl. 62—160 **4 Claims**



An air conditioner comprising a compressor, an outdoor heat exchanger, a first indoor heat exchanger, a second indoor heat exchanger, a first capillary tube, a second capillary tube, a third capillary tube, a first valve, a second valve and a piping communicating said elements with each other, said compressor communicating with one side of said outdoor heat exchanger and said first indoor heat exchanger, the other side of said outdoor heat exchanger communicating with one side of said first capillary tube and said second capillary tube, the other side of said first capillary tube communicating with the other side of said first indoor heat exchanger, the other side of said second capillary tube communicating with one side of said second indoor heat exchanger, the other side of said second indoor heat exchanger and said compressor communicating with each other by said second valve, a series circuit of said second capillary tube and said second indoor heat exchanger and said first valve being connected in parallel with each other, said third capillary tube being connected between the side of said first indoor heat exchanger closer to said first capillary tube and the side of said second indoor heat exchanger closer to said second capillary tube, said first valve being closed and said second valve being opened during a cooling operation, and said first valve being opened and said second valve being closed during a dehumidifying operation.

3,779,032

ICE MAKER WATER FILL CONTROL

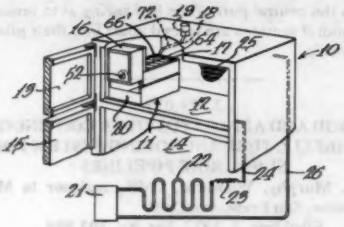
Duane C. Nichols, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 2, 1972, Ser. No. 277,324

Int. Cl. F25c *1/04*

U.S. Cl. 62—233 **8 Claims**

An ice maker having electrical control means for automatically controlling the making of ice bodies such as in a home refrigerator. The electrical control includes a switching mechanism having adjustable means for varying the amount of water delivered to the ice maker tray to correspondingly vary the size of the ice bodies formed in the apparatus.



3,779,033

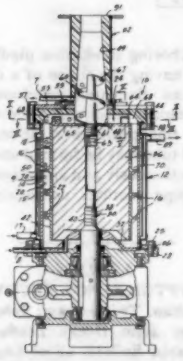
HARVEST AUGER FOR ICE MAKER

Donald F. Swanson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 17, 1972, Ser. No. 244,595

Int. Cl. F25d *1/14*

U.S. Cl. 62—354 **7 Claims**



An upright ice maker of the type having a combined auger and press, has means for increasing the capacity of the ice maker. The harvest auger is provided with non-parallel flights having a variable pitch angle with respect to the vertical axis of the auger which is greater at the top than at the bottom of the harvest auger. A series of scavenging vanes are mounted on top of the harvest auger and arranged to rotate with the harvest auger for moving the ice products radially inwardly from the wall of the freezing chamber through a mechanical transfer means to the compression auger.

3,779,034

COOLING TRANSPORT MECHANISM

Hubert Davies Morgan, Papcastle, England, assignor to British Steel Corporation, London, England

Filed May 3, 1972, Ser. No. 249,865

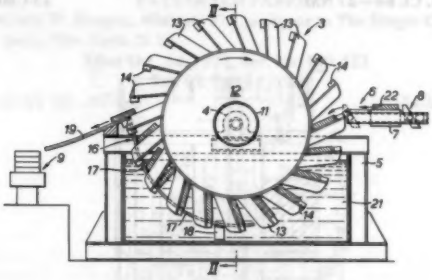
Claims priority, application Great Britain, May 7, 1971, 13,732/71

Int. Cl. F25d *25/02*

U.S. Cl. 62—381 **12 Claims**

This invention relates to a mechanism for transporting steel sections through quenching tanks as they leave the finishing mill in a hot state.

The invention provides a cylindrical framework rotatable in a housing and having a number of sets of arms outstanding from its periphery. A fixed arcuate rack is interleaved with these arms and extends from an exit station on one side of the framework towards an entry station on the opposite side. The arrangement is such that the steel billets/slabs are individually



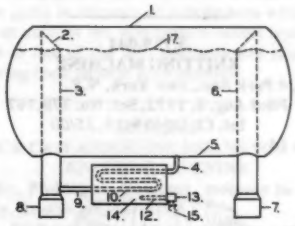
deposited on the trailing faces of selected sets of the arms at the entry station and as the framework rotates they are carried downwardly towards the rack and then driven upwardly along it by the leading faces of the succeeding set of arms, the rake of these arms at the exit station being such that they are discharged under gravity to a stacker mechanism.

3,779,035

SUCTION ACCUMULATORS FOR REFRIGERATION SYSTEMS

Daniel E. Kramer, 2009 Woodland Dr., Yardley, Pa.

Filed Dec. 17, 1971, Ser. No. 209,162
Int. Cl. F25b *43/00*
U.S. Cl. 62—503 **8 Claims**



In a suction accumulator for refrigeration systems, the improvement which comprises an external conduit for the flow of oil and of trapped liquid refrigerant which conduit passes in heat exchange relation with a heat storage means allowing the stored heat to be transferred to the liquid refrigerant and oil as it flows through the conduit.

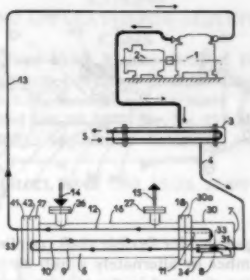
3,779,036

EXPANSION AND EVAPORATION APPARATUS FOR REFRIGERATING MACHINES

Pierre Girardin, Nantes, France, assignor to Froid Industrial Brissonneau York S. A., Paris, France

Filed Jan. 20, 1972, Ser. No. 219,424
Claims priority, application France, Jan. 21, 1971, 7102901
Int. Cl. F25b *43/00*
U.S. Cl. 62—512 **4 Claims**

Apparatus for expanding and evaporating refrigerating fluid in a compression-type refrigerating machine for cooling a fluid such as water, brine, air, moist air, circulating outside the tubes of a tube bundle, said apparatus being characterized in that it comprises (i) a tube bundle part of which is fed, inside the tubes, by forced circulation of refrigerating fluid with a flow exceeding the flow vaporized, the other part of the said bundle serving to dry and to superheat the vapour produced in the first part, (ii) a device, for separating excess liquid, positioned between the first and second parts of said tube bundle,



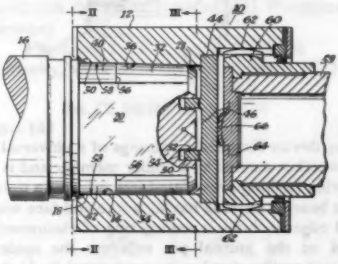
(iii) a separation chamber arranged to collect said excess liquid, and (iv) an ejector taking up said excess liquid to recirculate it, said ejector operating with a motive fluid consisting of the high pressure liquid refrigerating fluid coming from the condenser, said motive fluid being expanded in the neck of the primary nozzle of the ejector.

3,779,037

COUPLING FOR MILL ROLLS

Andrew J. Petros, Oakdale, and Clement S. Rybar, Pittsburgh, both of Pa., assignors to Mesta Machine Company, Pittsburgh, Pa.

Filed May 8, 1972, Ser. No. 251,300
Int. Cl. F16c *35/08*
U.S. Cl. 64—5 **14 Claims**

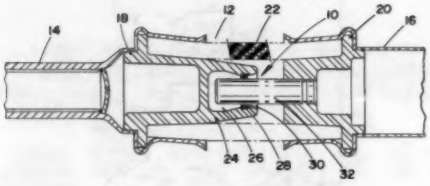


A coupling for a mill roll and the like comprises a connector having a coupling bore therein, with the bore having a first surface shaped for close fitting engagement with a neck portion of the roll adjacent one extremity of the coupling engagement therebetween and a second surface shaped for close fitting engagement with the roll neck adjacent the opposite extremity of such engagement and a third surface disposed generally between the first and said second surfaces shaped for an increasingly close fit with the roll neck as the roll neck is increasingly inserted into the connector.

3,779,038
CENTERING DEVICE FOR FLEXIBLE SHAFT COUPLINGS

Robert E. Stuemky, Elizabeth, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Apr. 19, 1972, Ser. No. 245,419
Int. Cl. F16d 3/28
U.S. Cl. 64—11 B 12 Claims

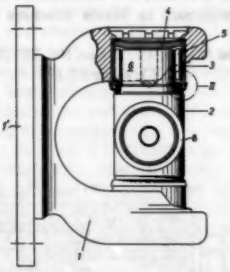


A centering device for flexible shaft couplings that includes a tubular member or alternately a hub having a socket; an elastomeric ring disposed in the tubular member or socket; and a stud extending into the socket or tubular member, and through the elastomeric ring to be radially supported thereby.

3,779,039
SEALING DEVICE FOR THE NEEDLE BEARING OF A UNIVERSAL JOINT JOURNAL PIN

Josef Schultenkamper, Essen, Germany, assignor to Gelenkwellenbau GmbH, Essen, Germany

Filed Dec. 15, 1970, Ser. No. 98,265
Claims priority, application Germany, Dec. 16, 1969, P 19 63 079.6
Int. Cl. F16d 3/26
U.S. Cl. 64—17 A 7 Claims

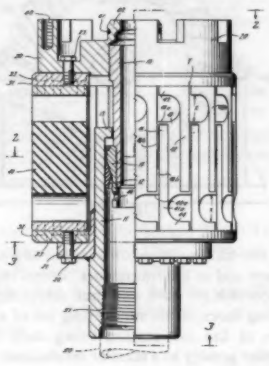


Sealing device for needle bearings of a universal joint journal pin which is carried by a spider member and is receivable in a bearing bushing press-fitted into a leg of a universal joint fork, the bearing bushing having a free end face with an outer terminal edge, includes a sealing ring of elastomeric material mounted on the journal pin adjacent the spider member proper, said sealing ring having a substantially V-shaped cross section and being formed with one sealing lip abutting the spider member and another sealing lip sealingly engaging the free end face of the bearing bushing; and a ring of synthetic material having a substantially L-shaped cross section and formed with a radially directed leg seated with prestressing on said sealing ring between said sealing lips thereof, and a leg extending axially parallel and engaging the bearing bushing for protecting the seal between said other sealing lip and the bearing bushing against penetration by water and dust, said axially parallel leg being of predetermined diameter so that the inner terminal edge thereof engages with prestressing the outer terminal edge of the bearing bushing.

3,779,040
VIBRATION DAMPENERS

William R. Garrett, Midland, Tex., assignor to Smith International Inc., Midland, Tex.

Continuation of Ser. No. 069,463, Sept. 3, 1970, which is a continuation of Ser. No. 815,856, April 14, 1969. This application Nov. 8, 1971, Ser. No. 196,819
Int. Cl. F16d 3/14
U.S. Cl. 64—27 NM 23 Claims

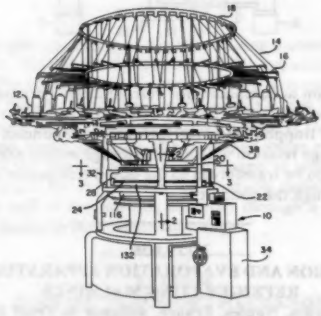


A vibration dampener may be used between the drill steel and power swivel of a boring machine. A plurality of sectors may be disposed side by side and connected to rings at their ends to form an annulus. Each sector may comprise a metal-rubber sandwich. The annulus may be used to provide means to transmit torque and compression. A pair of tubes with sealed telescopic connection therebetween and travel limit stops may be used to provide connection for transmitting tension and drilling fluid.

3,779,041
KNITTING MACHINE

George Gati, 4 Park Ave., New York, N.Y.

Filed Aug. 8, 1972, Ser. No. 278,787
Int. Cl. D04b 9/10, 35/00
U.S. Cl. 66—14 20 Claims



The present invention relates generally to knitting machines which incorporate electrically operated knitting needles of the double hook latch type which have no butts and wherein the machine itself has no cams. Electromagnetic energizers are employed to reciprocate the buttless knitting needles by including longitudinally spaced coils which are activated in accordance with a predetermined sequence of operation to reciprocate the needle to form a predetermined knitted pat-

tern configuration. The machine also includes a vacuum take-up device to control heat flow through the apparatus so that the heat which is developed when the coils are activated may be utilized for heat setting of the newly knitted fabric.

3,779,042

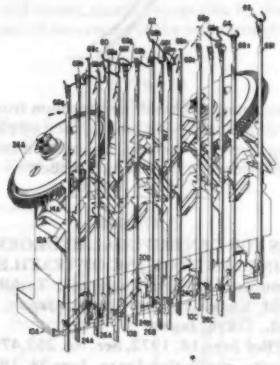
CIRCULAR KNITTING MACHINES FOR PRODUCING A PATTERNED FABRIC

Donald W. Reagan, Hialeah, Fla., assignor to The Singer Company, New York, N.Y.

Filed Oct. 14, 1971, Ser. No. 189,422

Int. Cl. D04b *13/76*

U.S. Cl. 66—50 A **5 Claims**



A circular knitting machine is provided with: (a) a pattern wheel for one or more of the feeds but for less than all of the feeds of the machine to raise selected needles to knit positions, (b) a two-position jack pivotally mounted on each needle, (c) jack-engageable cam means for determining the positions of the jacks in advance of non-pattern wheel feeds, and (d) a cam at each of the non-pattern wheel feeds to contact jacks when in one of the said positions and raise only those needles having their jacks in such position.

3,779,043

STITCH CAM ADJUSTING MEANS FOR A FLAT KNITTING MACHINE

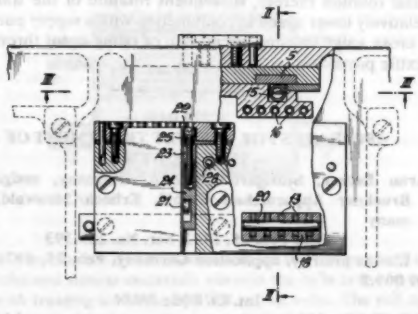
Ernst Goller, Pfullingen, Germany, assignor to H. Stoll and Company, Reutlingen, Germany

Filed Oct. 11, 1972, Ser. No. 299,615

Claims priority, application Germany, Oct. 16, 1971, P 21 51 677.8

Int. Cl. D04b *7/00*

U.S. Cl. 66—77 **10 Claims**



In a flat knitting machine, a mechanism for adjusting the leader stitch cam for its position as the follower stitch cam during the return stroke in the opposite direction. A plurality of selector levers are moved to an inoperative raised position and held there by a magnet as the selected one of said levers is pushed off of the magnet and urged downwardly to an active position. The selector levers are individually adjustable to different stitch cam adjusting positions. A raised portion of the stitch cams engage whichever selector lever is selected.

3,779,044

METHOD AND APPARATUS FOR ADJUSTING STITCH CAMS

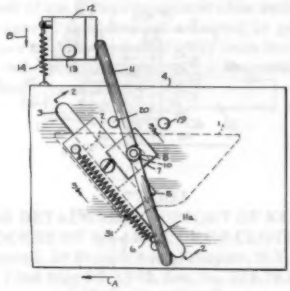
Hans Schieber, and Erich Krause, both of Bopfingen, Germany, assignors to Universal Machinenfabrik Dr. Rudolf Schieber G.m.b.H., Westhausen, Germany

Filed Jan. 20, 1972, Ser. No. 219,342

Claims priority, application Germany, Mar. 11, 1971, P 21 11 803.6

Int. Cl. D04b *7/00, 15/36, 35/00*

U.S. Cl. 66—78 **11 Claims**



Automatic cam setting device arranged on knitting machines at the end of carriage travel and including a fixed pin which engages and flips a lever on the carriage to loosen a cam which is then positioned as the carriage and cam move over a cam setting device. The cam is locked in its new position as the carriage moves in the opposite direction.

3,779,045

DEVICE FOR SPREADING OF THE KNITTING ON FLAT-BED KNITTING MACHINES

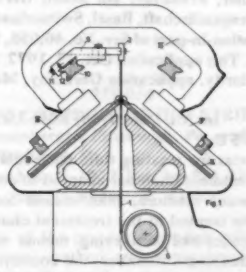
Erich Krause, Bopfingen, Germany, assignor to Universal Machinenfabrik Dr. Rudolf Schieber KG, Westhausen, Postfach, Germany

Filed June 1, 1972, Ser. No. 258,766

Claims priority, application Germany, June 7, 1971, P 21 28 262.2

Int. Cl. D04b *35/00, 15/88*

U.S. Cl. 66—147 **6 Claims**



A device for maintaining knitted material stretched during its movement in a knitting machine from the knitting operation to a material removal roll, the device comprising guide

bars around which the material selvages are knit, the guide bars extending from above the knitting needles to the material removal roll and being adjustable by means of adjusting screws to swing in the plane of the knitted material to provide control and adjustment of their stretching effect on the material.

3,779,046

APPARATUS FOR SEPARATING HOSIERY ARTICLES

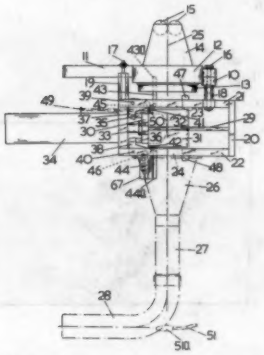
Charles Willin Perkins, Skeffington, England, assignor to Hosiery Equipment Limited, Leicester, England

Filed Jan. 28, 1970, Ser. No. 6,521

Claims priority, application Great Britain, Feb. 5, 1969, 6,127/69

Int. Cl. D04b *35/00, 15/88*

U.S. Cl. 66—147 **8 Claims**



A machine attachment for separating tubular knitted articles knitted in succession and connected each to the next succeeding one by a frangible joining thread, in accordance with which the fabric is gripped above and below a separation line and between the positions of gripping the fabric is deflected laterally by a pusher device until the joining thread is fractured and the leading article separated from the next succeeding one, the separated article being subsequently drawn away through a discharge tube. The pusher device is conveniently formed as part of a short tube through which the fabric from the knitting machine passes, which tube is slidable laterally between upper and lower openings for passage of the fabric, which openings have flaps to close them and provide for the gripping of the fabric.

3,779,047

APPARATUS FOR THE TREATMENT OF PERMEABLE TEXTILE MATERIALS

Heinz Fleissner, Frankfurt am Main, Germany, assignor to Vepa Aktiengesellschaft, Basel, Switzerland

Continuation-in-part of Ser. No. 40,055, May 25, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,295

Claims priority, application Germany, May 24, 1969, P 19 26 742.6

Int. Cl. D06c *1/08;* **B05c** *3/132*

U.S. Cl. 68—5 D **19 Claims**

An apparatus for treating fluid-permeable materials which includes a treatment chamber adapted to contain a gaseous or liquid treatment medium, inlet means for introducing the material to be treated to the treatment chamber, at least one perforated roller-like conveying means rotatably disposed within said treatment chamber, the conveying surface of said roller-like conveying means being provided by an outer perforated jacket means, an inner perforated jacket means spaced closely adjacent to the outer jacket means, the inner and outer jacket means cooperating to allow treatment of material of substantially differing widths without appreciably affecting the rate of flow of the treatment medium across the conveying surface, means for rotating the conveying means,

means for circulating the treatment medium from the outside to the inside of the conveying means, thereby penetrating the material being conveyed thereon, and outlet means for removing the material from the treatment chamber.

3,779,048

APPARATUS FOR CENTRIFUGAL HYDROEXTRACTION COMBINED WITH OILING OF TEXTILE PIRNS

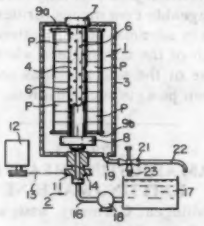
Shigeo Kitamura; Takatugu Nakamoto; Toshihiro Kaziura, and Shuichi Kurata, all of Osaka, Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed June 14, 1972, Ser. No. 262,479

Claims priority, application Japan, June 26, 1971, 46/46487

Int. Cl. B05c *8/02*

U.S. Cl. 68—150 **13 Claims**



Apparatus including a rotary upright spindle is placed within a chamber confined by an openable mantle casing in order to extract water or watery liquid from textile pirns mounted thereon by centrifugal effect caused by a high speed axial rotation thereof, subsequent rotation of the spindle at relatively lower speed in combination with a supply pump and a cross valve causing circulation of oiling agent through the textile pirns.

3,779,049

APPARATUS FOR THE WET TREATMENT OF A TEXTILE WEB

Arno Becker, Stuttgart-Vaihingen, Germany, assignor to Bruckner Apparatebau GmbH, Erbach/Odenwald, Germany

Filed Feb. 25, 1972, Ser. No. 229,393

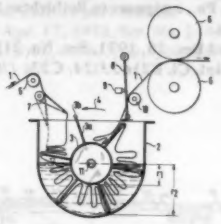
Claims priority, application Germany, Feb. 25, 1971, P 21 09 009.5

Int. Cl. B05c *3/134*

U.S. Cl. 68—158 **14 Claims**

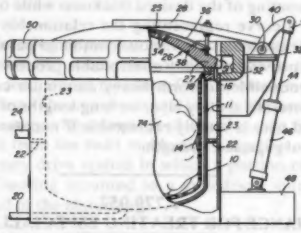
This invention relates to apparatus for the wet treatment of a textile web in a vat of liquid, the apparatus including an in-

termittently rotated compartmented drum disposed in the vat, conveyor means disposed in front of and behind the vat for the



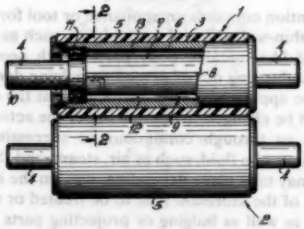
textile web, and sensor means engageable by the web for controlling the rate of movement of the web through the vat.

3,779,050
EXTRACTING
James R. Olliges, Sr., River Grove, Ill., assignor to A-T-O Inc., Willoughby, Ohio
Filed July 10, 1972, Ser. No. 270,050
Int. Cl. D06f *47/06*
U.S. Cl. 68—242 **10 Claims**



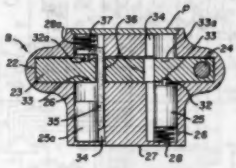
An extractor including a rigid container, a cover overlying the container and having an inner surface defining an imperforate annular region, and a vertically movable guard mounted exterior of the container.

3,779,051
WEB-TREATMENT ROLLERS OF POLYURETHANE
Eduard Kuesters, Gladbacher Strasse 457, Krefeld, Germany
Continuation of Ser. No. 35,362, May 7, 1970, abandoned.
This application Feb. 6, 1973, Ser. No. 329,982
Int. Cl. D06f *45/22*
U.S. Cl. 68—248 **2 Claims**



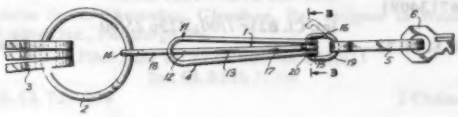
This disclosure is directed to rollers for the treatment of textile webs and similar materials wherein the rolls come in contact with treating solutions applied to the webs. The roll consists of a cylindrical core having a shell of a material with an elastic surface. The surface comprises a polyurethane coating having a Shore A hardness of 86 to 96.

3,779,052
MAGNETIC LOCK
Ronald S. Deitch, 7695 E. Quincy, Denver, Colo.
Filed Aug. 30, 1971, Ser. No. 175,998
Int. Cl. E05b *45/08, 47/00, 67/22*
U.S. Cl. 70—38 C **13 Claims**



A lock device using magnetic tumblers to release the shackle or bolt of the lock or to open or close switches of a circuit. The magnetic tumblers are mounted in guideways adjacent to a face to shift towards or away from this face responsive to the influence of magnets in a magnetic key placed against the face.

3,779,053
MEANS FOR DETACHABLE SUPPORT OF KEYS WITHIN A POCKET OF AN ARTICLE OF CLOTHING
John D. Langwell, 28 Branch Ave., Freeport, N.Y.
Filed May 22, 1972, Ser. No. 255,783
Int. Cl. A44b *15/00*
U.S. Cl. 70—456 R **14 Claims**

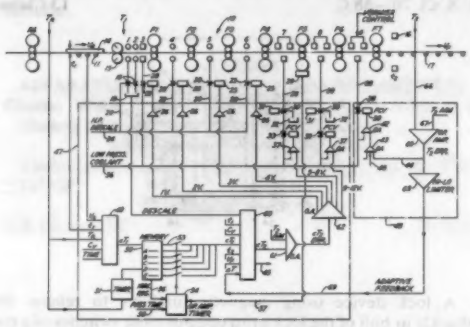


A key chain in which a key ring is attached to a clip adapted for detachable engagement with the material of a pocket of an article of clothing such that the ring and keys thereon are suspended within the pocket. Pivotably attached to the clip at an end thereof remote from the key ring is a manually engageable element which can be inserted into the pocket when the key chain is mounted in the worn position, the manually engageable element being removed from the pocket and employed to detach the clip from the pocket.

3,779,054
COOLANT CONTROL FOR HOT STRIP MILL
Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.
Filed Mar. 2, 1972, Ser. No. 231,221
Int. Cl. B21b *1/22, 45/02*
U.S. Cl. 72—13 **2 Claims**

The disclosure of the present invention relates to a strip temperature control method and apparatus for a finishing train of a hot strip rolling mill, including strip interstand coolant supply means, and a control for varying the rate of flow thereof, which includes a feed-forward control signal wherein the rate of flow is controlled in certain stands with reference

to a computed temperature and a desired temprature of the strip as it leaves the train, and a feed-backward control signal



wherein the rate of flow is controlled in one or more stands with reference to the actual temperature and a desired temperature as it leaves the train.

3,779,055

APPARATUS AND METHOD FOR MANUFACTURING INSULATED CONDUCTIVE WIRES

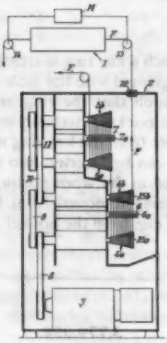
Roland Abel Goyffon, Macon, France, assignor to Manufacture De Fils Isoles Taurus (Mafit), Macon, France

Continuation-in-part of Ser. No. 785,920, Dec. 23, 1968, abandoned. This application Nov. 9, 1971, Ser. No. 197,045

Claims priority, application France, Dec. 28, 1967, 67134091

Int. Cl. B21c *1/00*; B23p *25/00*

U.S. Cl. 72—46 **6 Claims**



The apparatus comprises a wire-drawing machine driven in combination with an enamelling machine and an intermediate non-slip capstan. The wire-drawing machine and the enamelling machine are respectively driven by individual, independent motor means. The wire issuing from the last die of the wire-drawing machine is driven directly by the non-slip capstan into the enamelling machine. By this method of combining the wire-drawing and enamelling machines either machine can be stopped for adjustment or replacement of parts without stopping the other.

3,779,056

METHOD OF COATING STEEL WIRE WITH ALUMINUM

George Padjen; Robert W. Helman, and Joseph A. Brugger, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 28, 1971, Ser. No. 213,048

Int. Cl. B21c *23/24*; C23c *1/08*

U.S. Cl. 72—47 **17 Claims**

A heavy aluminum coating ranging in thickness from 10 to 15 per cent of the as-coated radius of a wire is provided on steel wire having a nominal diameter of from 0.08 to 0.25 inches by a combination of heating the wire to a temperature within a predetermined range, passing the wire at a predetermined speed related in a substantially inverse ratio to the temperature of the wire through a molten aluminum bath having a predetermined temperature and depth inversely related to each other. The particular operating conditions of the process provide a coating of the desired thickness while operating on a plateau in a curve representing the relationship between the coating thickness and the various combined parameters of the process to provide a readily controllable process of making an easily reproducible, uniform heavy aluminum coating with a very thin interfacial alloy layer on long lengths of ferrous wire. The coated wire is readily redrawable if necessary to attain a desired final gage and strength.

3,779,057

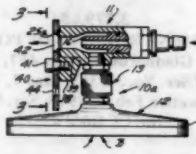
APPLIANCE FOR TREATING ESPECIALLY THIN-WALLED METAL WORK PIECES

Kent L. Sonnenberg, 750 Kappock St., Riverdale, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,433

Int. Cl. B21d *1/12*

U.S. Cl. 72—56 **4 Claims**



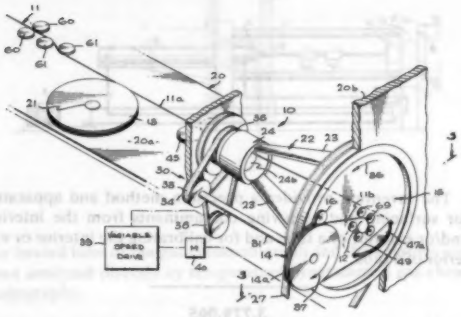
The invention concerns an appliance or tool for treating, in particular, thin-walled metal work pieces, such as automobile fenders and like metallic body parts which need repair or require straightening out of dented or bulging damaged parts thereof. The appliance is so constructed that the applicator's adaptor can be changed to operate under the action of a state of vacuum or through continuous or successive agitation under pressure of a fluid, such as air, steam, and the like. This operation may take place depending, e.g., on the damage of a work piece of the aforesaid type to be treated or repaired, so that dents, as well as bulging or projecting parts of a fender may be readily worked upon in a service station or at the garage of a home. The velocity and impact of the stream of fluid employed may be readily regulated or can be even completely stopped. The fluid may be admitted to the appliance to act under vacuum or pressure with respect to the adaptor proper applied to the work piece, thus affording the construction of a universally applicable tool for all practical purposes.

3,779,058

SPRING FORMING APPARATUS

Harry H. Norman, Los Angeles, Calif., assignor to Stephen Baliski, Gardena, Calif., a part interest

Filed Apr. 17, 1972, Ser. No. 244,407
Int. Cl. B21f 3/02, 3/04, 3/10, 7/00, 23/00, 35/00
U.S. Cl. 72—66 12 Claims



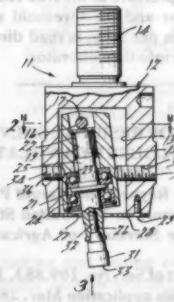
A spring forming apparatus of the type wherein a wire is twisted substantially circumferentially between an isolator wheel and a feed wheel mounted for planetary motion on a revolving platen. The improvements include the use of a pinch wheel cooperating with a single feed wheel to grip the wire adjacent its exit from the twist mechanism, together with a simplified planetary drive system in which a portion of the drive assembly is bearing mounted to a cylindrical journal at the wire input end of the platen cage.

3,779,059

HEAD FORMING TOOL

George Mink, Warren, Mich., assignor to USI Corporation, Pasadena, Calif.

Filed Oct. 29, 1971, Ser. No. 193,873
Int. Cl. B21j 15/36
U.S. Cl. 72—67 8 Claims



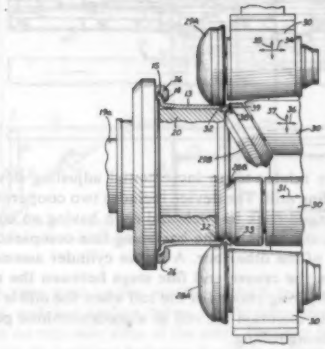
A tool for forming heads on rivets or the like. The tool includes a driven member that is rotatable about an axis and which has an internal cavity. Supported within the cavity is a tool holder which is disposed at an angle to the axis of rotation of the driven member. A work forming member or tool is rotatably journalled within the tool holder on anti-friction bearings and engages the rivet for offsetting it upon rotation.

3,779,060

METHOD AND APPARATUS FOR MAKING STEPPED RIMS

Paul B. Schroder, Hamm/Westfalen, Germany, assignor to Leifeld & Co., Ahlen/Westfalen, Germany

Filed Sept. 16, 1971, Ser. No. 181,170
Claims priority, application Germany, Oct. 28, 1970, P 20 53 005.6
Int. Cl. B21d 22/18
U.S. Cl. 72—87 4 Claims



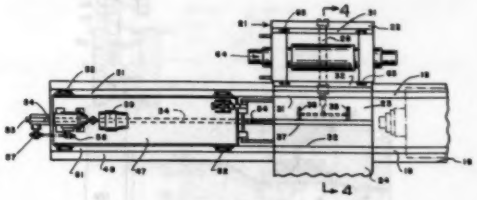
A method and apparatus for manufacturing a stepped rim from a cylindrical ring is provided. The ring is bent outwardly at one end to form a clinch and the opposite end of the ring is indented to form a locking ring groove.

3,779,061

ROLL CHANGING DEVICE

Charles Storer Shumaker, Glenshaw, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed June 14, 1972, Ser. No. 262,811
Int. Cl. B21b 31/08
U.S. Cl. 72—239 3 Claims



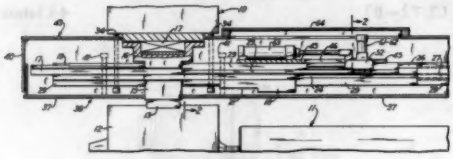
This disclosure relates to a roll changing device for a rolling mill including two side shifting platforms arranged in front of the mill, each having a pair of tracks for supporting a pair of rolls, one pair having been removed from the mill to be replaced by the second pair once the first pair is side shifted away from the front of the mill to position the second pair in front of the mill. Each platform also includes an opening for receiving a gear rack arranged to have its teeth projecting upwardly. On the side of the platforms remote from the mill a carriage is arranged having a motor driven pinion that engages an extension of one of the gear racks of the platforms when arranged in front of the mill, the carriage being employed to push and pull a pair of rolls to and from the mill. When not in use, the gear racks of the platforms are covered by plates selectively movable over the openings.

3,779,062

ROLL POSITIONING MEANS FOR A ROLLING MILL

Charles Gegick, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed June 5, 1972, Ser. No. 259,634
Int. Cl. B21b *31/30*
U.S. Cl. 72—244 10 Claims



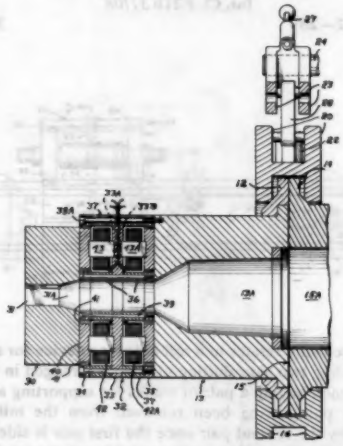
This disclosure relates to an incremental adjusting device for a roll of a rolling mill. The device includes two cooperative sliding bars arranged back to back and each having an equal number of steps, the steps of one bar being fine compared to the coarse steps of the other bar. A piston cylinder assembly selectively moves the coarse and fine steps between the mill housing and the bearing chocks of the roll when the mill is unloaded in order to maintain the roll at a predetermined passline of the mill during rolling.

3,779,063

ADAPTERS INCLUDING ELECTRO-MAGNETIC ATTACHING MEANS FOR USE WITH EXTRUDERS

Mathew R. Gannon, 243 Park Ave., Revere, Mass.

Filed Feb. 2, 1972, Ser. No. 222,930
Int. Cl. B23b *5/22*
U.S. Cl. 72—253 9 Claims



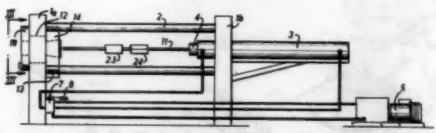
Adapters are disclosed for use with extruders and are provided with electro-magnetic means operable to quickly, easily and securely interconnect the die member and the adapter. Preferably, the adapter is also provided with additional electro-magnetic means operable to similarly connect the adapter to the head member which may itself be conventionally detachably attached to the barrel of the extruder.

3,779,064

PROCESS AND APPARATUS FOR CALIBRATING AND SURFACING TUBES

Louis Pierre Albert Besson, Romainville, France, assignor to Chabas & Besson S.A., Romainville, France

Filed Oct. 29, 1971, Ser. No. 193,632
Claims priority, application France, Nov. 6, 1970, 7039913
Int. Cl. B21c *1/24*
U.S. Cl. 72—283 19 Claims



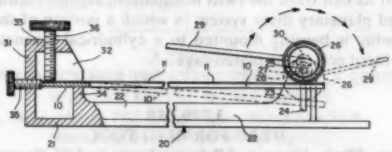
The invention provides a precision method and apparatus for surfacing and removing contaminants from the interior and/or exterior of a tube and for calibrating the interior or exterior of a tube.

3,779,065

CALIBRATOR FOR DETERMINING THE MAGNITUDE OF STRAINS IN RIGID ARTICLES

Greer Ellis, Pelham, N.Y., assignor to Vishay Intertechnology, Inc., Malvern, Pa.

Filed May 23, 1972, Ser. No. 256,027
Int. Cl. G01n *3/62*
U.S. Cl. 73—1 R 10 Claims



A direct reading, portable calibrator is disclosed for use in accurately measuring the threshold crack sensitivity of a brittle coating for experimental stress analysis. The calibrator is operated by loading a calibration bar, coated with a brittle coating, with thumb pressure at the free end of the bar. Cracks in the coating appear and the threshold strain value, determined in microinches per inch, is read directly from a precision strain scale built into the calibrator.

3,779,066

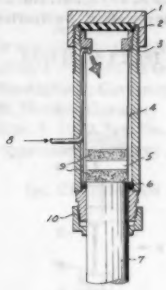
DETERMINATION OF RESIDUAL SOLVENT IN OILSEED MEALS AND FLOURS BY A VOLATILIZATION PROCEDURE

Sara P. Fore; Eric T. Rayner, and Harold P. Dupuy, all of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 109,883, Jan. 26, 1971, Pat. No. 3,715,910. This application Mar. 28, 1972, Ser. No. 238,878
Int. Cl. G01n *31/08*
U.S. Cl. 75—23.1 1 Claim

This invention relates to a simple, rapid and direct gas-chromatographic (GC) procedure for detecting residual solvents and other volatiles present in vegetable oils, peanuts, nut-butter products, and oilseed meals and flours. A sample of the product to be analyzed is placed between glass wool plugs in a glass insert tube of a gas chromatograph. When required,

water is added in a prescribed manner to facilitate the release of the volatile materials present. The insert tube is placed in



the heated inlet of the gas chromatograph and the volatiles are then analyzed directly by temperature programmed gas chromatography.

3,779,067

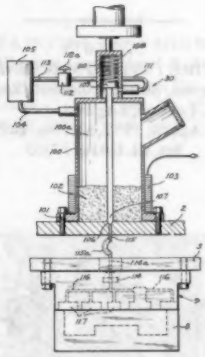
DEVICE FOR FINISHING COMPLEMENTARY PARTS AND TESTING THE SAME

Walter Reis; Helmut Pfenning, both of Obernburg/Main, and Dietmar Boll, Schippach, all of Germany, assignors to said Reis, by said Pfenning and Boll

Continuation-in-part of Ser. No. 887,500, Dec. 23, 1969, Pat. No. 3,640,411. This application Jan. 3, 1972, Ser. No. 214,797

Int. Cl. G01m *3/02*

U.S. Cl. 73—37 **17 Claims**



A device for finishing and testing complementary die or mold parts and similar complementary parts has a support plate for supporting a part to be finished in a downwardly facing position. This support plate is slidable between a lowered position in which this part and a second upwardly facing part complement or otherwise coact with each other and a raised position in which the two parts face each other spaced apart, and is also swingable into a position in which the parts are in substantially planar alignment both facing upwardly, whereby both parts are conveniently accessible for finishing. The device also includes a testing assembly for testing the complementary parts as to accuracy of fit and trueness of shape.

3,779,068

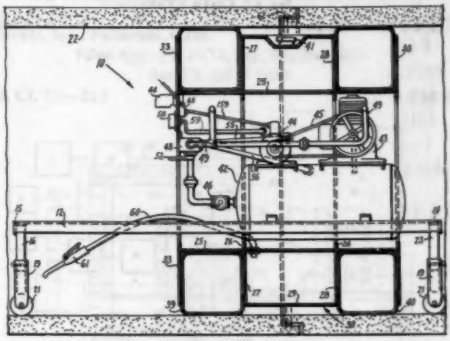
PIPE JOINT TESTER

William R. Forsythe, 3052 Bertis Dr., Sacramento, Calif.

Filed Dec. 6, 1971, Ser. No. 205,035

Int. Cl. G01m *3/28*

U.S. Cl. 73—49.1 **3 Claims**



A pipe joint testing machine which moves internally of the pipe and has sealing tubes which circumferentially seal the pipe on opposite sides of the joint. Pressure is provided for applying air pressure between the seals against the joint so as to leak out and be detected by a pressure drop if the seal of the pipe joint is not air tight. Water is provided for wetting down the pipe joint should grouting to seal be required. An air compressor forms part of the machine for providing the compressed air both for testing and for supplying pressure to the water when required.

3,779,069

CHROMATOGRAPHIC APPARATUS AND METHOD

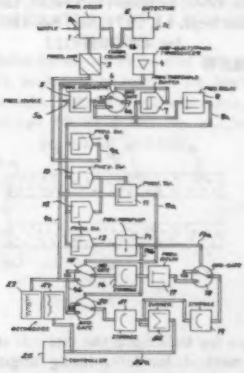
Gunter Berthold, Groitzsch, Germany, assignor to Veb Petrochemisches Kombinat Schwedt, Schwedt, Germany

Filed Jan. 4, 1971, Ser. No. 103,786

Claims priority, application Germany, Jan. 5, 1970, WP 421/144 788

Int. Cl. G01n *31/08*

U.S. Cl. 73—23.1 **13 Claims**



A gas chromatograph for analyzing specimens from a chemical-process line is triggered by a pneumatic sawtooth generator. The output signal is delivered to the recorder directly and through control, regulating and computing elements, all operating with pneumatic, rather than electrical, signals. The process regulator is likewise of the pneumatic type.

3,779,070

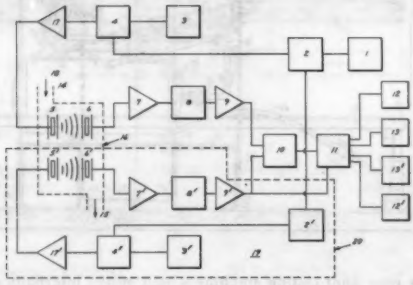
PARTICLE SIZE AND PERCENT SOLIDS MONITOR

Charles R. Cushman, Golden, Colo.; James C. Hale, Pea Ridge, Ark., and Vernon A. Anderson, Boulder, Colo., assignors to Autometrics Co., Boulder, Colo.

Continuation-in-part of Ser. No. 866,976, Oct. 16, 1969, abandoned. This application Nov. 23, 1971, Ser. No. 201,504

Int. Cl. G01n 15/00

U.S. Cl. 73—432 PS 57 Claims



This invention relates to a method and apparatus for developing signals representative of the size and number of particles, such as ore in a slurry. In a preferred form, the invention comprises directing two beams of ultrasonic energy through the slurry, each beam operating at a different frequency and with the beam frequencies so chosen that the attenuation of each beam is a different function of the percent solids by volume, the geometric means particle diameter, the standard deviation of the distribution of the particles and the largest sized particles in the slurry. The two signals resulting therefrom are compared and processed electronically so as to provide two output signals, one of which indicates the particle size and the other, the percent solids by volume in the slurry.

3,779,071

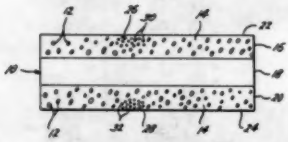
FATIGUE STRAIN GAUGES

Alvin D. Thomas, Jr., Austin, Tex., and Joseph Scott Thornton, Chagrin Falls, Ohio, assignors to Tracor, Inc., Austin, Tex.

Filed Sept. 13, 1971, Ser. No. 180,007

Int. Cl. G01l 1/22

U.S. Cl. 73—88.5 R 6 Claims



Safety gauges for indicating the internal state of structural materials and methods for determining fatigue of such materials, are provided. In one embodiment, an integral gauge is provided for use in a composite matrix-reinforcing fiber material, the gauge being constructed of like matrix-reinforcing fiber material having therein at least one conducting filament. In another embodiment, a gauge of this type is constructed having a bundle of conducting fibers, and the gauge is bonded to the exterior of a structural part. Conducting fibers are separated from one another by matrix material, to the maximum practical extent.

3,779,072

MEASURING APPARATUS INCLUDING IMPROVED STRING MOUNTING MEANS

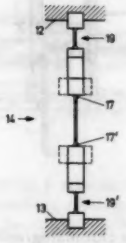
Eugen Meier, Wampflenstrasse 45, Meilen, Switzerland

Filed June 5, 1972, Ser. No. 259,854

Claims priority, application Switzerland, July 6, 1971, 9877/71

Int. Cl. G01l 1/10

U.S. Cl. 13—141 R 5 Claims



A load measuring apparatus of the type in which the variation in tension of a pre-stressed electronically-excited string element produces a variation in oscillation frequency that is a function of the parameter to be measured, characterized by the provision of a pair of mounting means for connecting the ends of the string element with the fixed and movable components of the apparatus, respectively, in such a manner that the string is decoupled against vibration in at least one transverse direction. Each of said mounting means is designed for flexure about a first axis normal to the longitudinal axis of the string element, the first axes of flexure and the longitudinal axis of the string element being contained in a common first plane. In accordance with an alternate embodiment, each mounting means also contains a second axis of flexure normal to the axis of the string element, said second axes and the string element axis being contained in a second plane normal to the first plane.

3,779,073

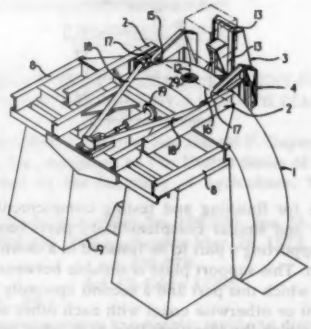
TIRE TESTING MACHINE

Clifford Ward Barson, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed Apr. 4, 1972, Ser. No. 240,918

Int. Cl. G01m 17/02

U.S. Cl. 73—146 14 Claims



A tire testing machine with rotatable drum and mounting means to permit the tire to be contacted with the drum. The drum comprises an annular flange and the mounting means is pivotally mounted radially inwardly of the flange about an axis

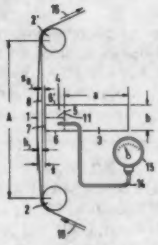
perpendicular to the axis of rotation of the drum and passing through the surface of the drum. Preferably the tire mounting means can also be moved to steer the tire and to move it laterally across the drum.

3,779,074

APPARATUS FOR MEASURING TENSILE STRESSES IN CONTINUOUSLY FED WEBS OF MATERIAL

Eberhard Breyer, Herrenberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 9, 1972, Ser. No. 233,120
Claims priority, application Germany, Mar. 10, 1971, P 21 11 527.5
Int. Cl. G01l 5/08
U.S. Cl. 73—144 9 Claims



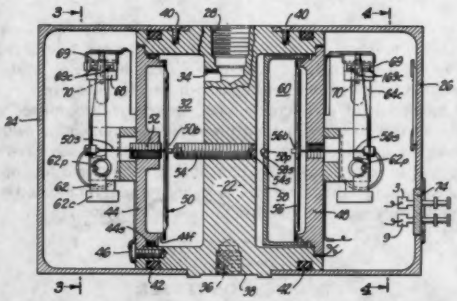
A duct is disposed underneath the travelling web between the two guide rollers and extends across the width of the web. The duct has at least one row of pocket-like chambers connected to a blower so that an air cushion and thereby a static pressure develops between the duct and web. The pressure prevailing in each of the chambers which is proportional to the tensile stress in the strips of the web running over each chamber is measured by a measuring device.

3,779,075

AIR-DATA INSTRUMENT AND METHOD

Stephen Andrew Hluchan, and Leland B. Tainter, Jr., both of Riverside, Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed June 21, 1971, Ser. No. 154,966
Int. Cl. G01c 21/10; G01l 7/12
U.S. Cl. 73—182 7 Claims



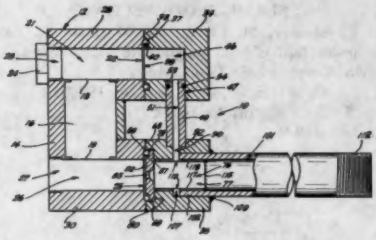
Means and method for sensing one or more sets of variable atmospheric and reference pressure phenomena and producing therefrom one or more sets of signals a first of which signals of all such sets represents directly and linearly the variation of a respective physical quantity selected from among airspeed and altitude and the second of which signals of all such sets represents directly the mn th power of the respective pressure phenomena sensed, and for electrically deriving from such signals a value of a dimensionless number commonly referred to as Mach number.

3,779,076

FLOW METERING RUN WITH ORIFICE PLATE

Lloyd T. Akeley, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 17, 1972, Ser. No. 244,415
Int. Cl. G01f 1/00
U.S. Cl. 73—211 8 Claims



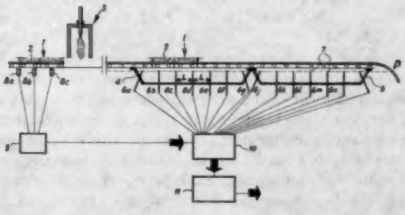
A flow metering run with an orifice plate for use with a differential pressure instrument for accurately measuring low flow rates of fluids. The flow metering run comprises a pair of flange connectors each having an internal chamber formed therein communicating with an outlet opening that is adapted to sealingly engage a high or low pressure inlet of the DP instrument. The internal chambers are interconnected by a pressure duct. A removable orifice plate is provided across the outlet opening of the low pressure flange connector and a straight flow inlet pipe having smooth inner surfaces and a length approximately ten times its diameter is connected into the low pressure internal chamber. The inlet pipe is aligned with the orifice plate so that a straight flow path through the low pressure side of the DP instrument is achieved. A screen is removably mounted across the flow inlet pipe about two pipe diameters upstream of the orifice plate to produce turbulent fluid flow into the orifice.

3,779,077

METHOD AND APPARATUS FOR ESTABLISHING THE FIRING TEMPERATURE CURVE OF A SINTERING CHARGE

Claude Barry, Saint-Julien-les-Metz, and Patrice Ratte, Metz, both of France, assignors to Institut De Recherches De La Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Apr. 10, 1972, Ser. No. 242,361
Int. Cl. G01k 13/06
U.S. Cl. 73—341 4 Claims



The firing temperature curve of a sintering charge is established by measuring the speed of the chain which carries successive portions of the charge and the temperature of the gases which have passed through the fired portions of the charge at points spaced longitudinally in the direction of the

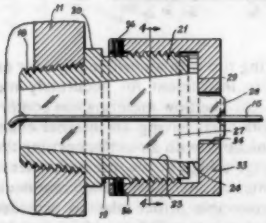
movement of the chain. The measurements are coordinated so that the temperature measurement depends on the speed movement, and the temperature measurements are periodically sampled after a series of such measurements has been completed. The corresponding information is stored in a memory and extracted from the memory after the completion of each series to obtain the firing temperature curve.

3,779,078

FLAME-PROOF FITTING

Glenda F. Kaesser, St. Louis, and Marshall G. Zavertnik, Manchester, both of Mo., assignors to Killark Electric Manufacturing Company, St. Louis, Mo.

Filed Oct. 20, 1971, Ser. No. 191,012
Int. Cl. G01k *1/14*
U.S. Cl. 73—343 R **7 Claims**



A flame-proof fitting for conducting a capillary tube through the wall of a box including a bushing threaded through the wall, having a tapered passage through it, two semi-frusto-conical wedges having axial grooves to receive the tube when placed together, and a cap threadable onto the bushing to force the two members tightly into the tapered passage in the bushing, compressing them together tightly, and compressing them tightly against the tube.

3,779,079

TEMPERATURE MEASURING SYSTEMS FOR AUTOMOTIVE VEHICLES AND THE LIKE

Richard K. Snook, Bridgeton, Mo., assignor to Diginetics Incorporated, Bridgeton, Md.

Filed June 28, 1972, Ser. No. 267,005
Int. Cl. G01k *1/16, 7/22, 13/02*
U.S. Cl. 73—346 **12 Claims**

A temperature gauge assembly for easy and convenient installation on automotive vehicles and similar powered devices. The preferred form of the temperature gauge assembly comprises a transmission temperature gauge assembly including a gauge unit and a sender unit. The gauge unit is comprised of an outer housing with an electrically responsive meter mounted therein and is provided for conveneint attachment to the dashboard or other suitable location of the vehicle. One terminal of the meter is electrically connected by means of a C-shaped clamp to a fuse terminal or other electrical member of the vehicle connected operatively to the battery of the vehicle. The other terminal of the meter is electrically connected to a sender unit comprising a second C-shaped clamp which is conveniently disposed about an electrically grounded member of the vehicle in heat exchange relationship to the fluid in which temperature is to be measured. In the case of the transmission temperature gauge, the second C-shaped clamp is connected to one of the fluid lines to the automotive vehicle transmission in order to detect temperature conditions

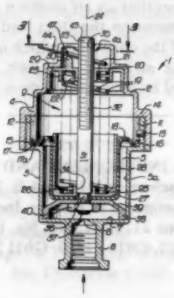
thereof. A diode having proper temperature sensitivity and electrical characteristics is secured to the second C-shaped clamp and is, in turn, connected to the meter. In another embodiment of the invention, means are provided for eliminating variation in the voltage from the generator of the vehicle.

3,779,080

GAUGE RECORDING MAXIMUM PRESSURE

Charles Harry Smith, Glendale, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Filed July 26, 1971, Ser. No. 166,016
Int. Cl. G01l *7/16*
U.S. Cl. 73—396 **7 Claims**



Device for visual indication of a maximum fluid pressure condition reached during a given interval of time. Useful for the in-flight recording of fluid pressure condition e.g., in the reduction gear box of a jet engine where excessive pressures are indicative of incipient failures, the device comprises a body having a cavity in fluid pressure communication with system fluid, an indicator movable relative to the body cavity in response to changes in system fluid pressure, and locking means limiting indicator travel to a single direction indicative of a relatively higher pressure condition in the system.

3,779,081

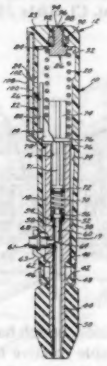
COMPRESSION TESTER

Norman Hofman, Los Angeles, Calif., assignor to Orion Industries, Inc., Los Angeles, Calif.

Filed Oct. 30, 1972, Ser. No. 302,292
Int. Cl. G01l *7/16*
U.S. Cl. 73—419 **6 Claims**

A pressure indicator or gauge which utilizes a piston responsive to test pressure to move a diagonally oriented indicator along a longitudinal axis. A display having a

transverse slot is located adjacent the indicator. As the diagonally oriented indicator moves longitudinally, it under-



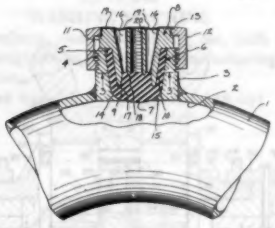
goes an apparent transverse travel along the slot, and pressure indicia adjacent the slot provide an indication of the magnitude of the test pressure.

3,779,082

ASEPTIC SAMPLE FITTING

Edwin J. Galloway, Menasha, Wis., assignor to Galloway Company, Neenah, Wis.

Filed Oct. 4, 1972, Ser. No. 295,042
Int. Cl. G01n *1/12*
U.S. Cl. 73—421 B **11 Claims**



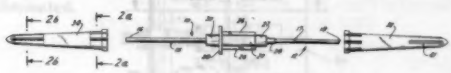
An aseptic sample fitting for a fluid enclosure includes a disposable tapered plug removably held in a neck with its inner end substantially flush with the enclosure interior. The plug includes a rigid core that is provided with circumferentially arrayed convergent sampling needle guide channels, and a cup-shaped self-healing pressure seal member. A sanitary seal member of flexible sheet material protects the outer ends of the guide channels and also indicates the location and used or unused state of each channel. The inner end of the neck opening defines a feathered shroud which extends across a rounded edge of the plug to minimize exposed area and improve surface configuration. Barrier ridges surround each guide channel at the interface of the core and pressure seal member to prevent movement of material from one channel to another. A retainer ring bears against a holding flange on the core to hold the plug in place.

3,779,083

METHOD AND APPARATUS FOR MEASURING PRECISE MICRO QUANTITIES OF FLUID SAMPLES

Waldemar Ayres, Rutherford; Evelyn Walker, Hackensack; William Holderith; Carl Benson, both of Wyckoff, and James Bandrowski, Ridgewood, all of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed May 28, 1971, Ser. No. 147,878
Int. Cl. G01n *1/10*
U.S. Cl. 73—425.4 P **16 Claims**



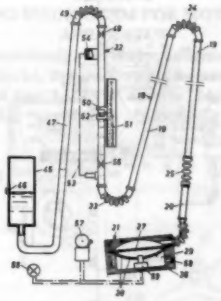
A method for measuring precise micro quantities of fluid samples and apparatus therefor is disclosed which uses a precision, disposable, self-filling capillary tube weakened at a predetermined point between its ends and mounted on a holder. The assembly includes means for protecting the capillary tube from breakage and for severing the capillary tube at the weakened predetermined point transversely across the tube so that the remaining portion or section of the capillary tube will contain a precisely measured volume of fluid to be tested. Optionally, the precisely measured volume of fluid may be mixed with an accurately measured volume of another liquid to thereby obtain a predetermined ratio of mixed liquids.

3,779,084

MEANS FOR CONTROLLING THE WORKING DEPTH OF AN EXCAVATOR

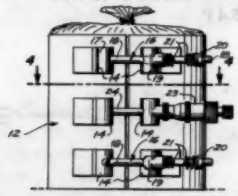
Hans Kenneth Nilsson, Paradis, Askloster, Sweden

Filed Oct. 13, 1971, Ser. No. 188,730
Int. Cl. G01c *5/04*
U.S. Cl. 73—432 HA **15 Claims**



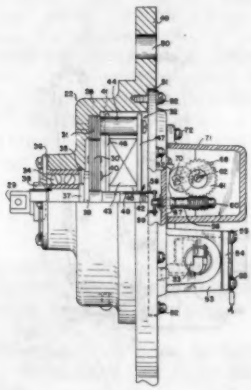
System for controlling the working depth of an excavator of the type having a shovel or similar earth moving implement fitted at the end of an articulated jib the system including a device comprising a level indicator located at the turret of the excavator and a conduit extending therefrom to a receptacle, including an elastic member mounted on the shovel. The device being filled with a fluid or several non-mixable fluids, and the pressure thereof upon an elastic member varying with changes in the vertical distance between the shovel and the indicator causing a variation of the level within the indicator, which may be utilized for various control purposes, either manually or automatically. The device may be provided with means for compensating for variations in relation to different depths or grades of the excavation.

3,779,085
MEANS AND METHOD OF TESTING EXPANSIVE CONCRETE
Edward K. Rice, 14656 Oxnard St., Los Angeles, Calif.
Filed July 24, 1972, Ser. No. 274,432
Int. Cl. G01b 3/10
U.S. Cl. 73—432 R 10 Claims



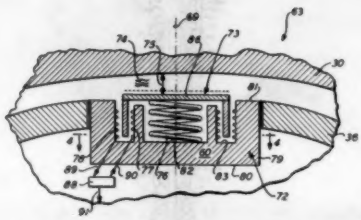
A method of testing expansive concrete wherein a sample of concrete is permitted to expand while subjected to a predetermined restraint, and subsequently to contract, measurements being made of the expansion and contraction. The means of testing expansive concrete comprising a split cylinder which receives a test sample of concrete contained in a pair of plastic bags having low friction characteristics. A measuring device indicates the amount of expansion and contraction occurring in the cylinder.

3,779,086
COMBINED PULSE GENERATOR AND ODOMETER ASSEMBLY FOR A RAILWAY LOCOMOTIVE
Harry L. Myrent, Wilmette, and Chester H. Fluder, Wheeling, both of Ill., assignors to Vapor Corporation, Chicago, Ill.
Filed Oct. 11, 1972, Ser. No. 296,513
Int. Cl. G01c 23/00, 22/00
U.S. Cl. 73—490 5 Claims



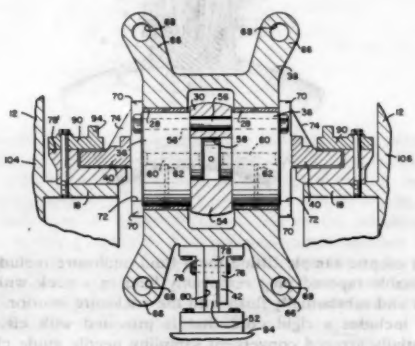
A combined rotary pulse generator and odometer assembly for the axle of a railway locomotive simultaneously generates a speed-indicative electrical signal and digitally totalizes mileage traveled. The assembly includes a pulse generator which has a shaft coupled to the end of a locomotive axle to develop electrical pulses as the axle turns. A novel odometer assembly, mounted on the cover plate of the pulse generator, converts the rotary motion of the generator shaft to oscillating motion to drive a digital mileage counter and record accumulated mileage for the locomotive. The odometer assembly is easily converted to accommodate different sizes of drive wheels and different units of distance, and the digital accumulated mileage display is positioned for maximum legibility under poor lighting conditions.

3,779,087
GYROSCOPE PICKOFF MEANS
Robert J. Dickie, Maywood, N.J., assignor to The Singer Company, Little Falls, N.J.
Filed Mar. 30, 1972, Ser. No. 239,645
Int. Cl. G01c 19/28
U.S. Cl. 74—5.6 10 Claims



A gyroscope is provided, which has an inner body, an outer body which is displaceable relative to the inner body, a rotor which is disposed inside the inner body, mounting means for positioning the outer body relative to the inner body, and pickoff means for sensing the angular displacement of the outer body relative to the inner body, wherein the pickoff means includes a base member which is fixedly connected to the inner body, a paddle member which is disposed adjacent to the base member and which engages a fluid portion that is trapped in a gap portion of variable thickness disposed adjacent thereto, a spring member which is connected to the paddle member and to the base member, a driving coil which can drive the paddle member at its resonant vibration frequency, and a sensing coil which can sense the vibration frequency of the paddle member.

3,779,088
CRANK MECHANISM
Bernard F. Miller, Corning, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Aug. 4, 1972, Ser. No. 277,889
Int. Cl. F16h 27/22
U.S. Cl. 74—44 21 Claims



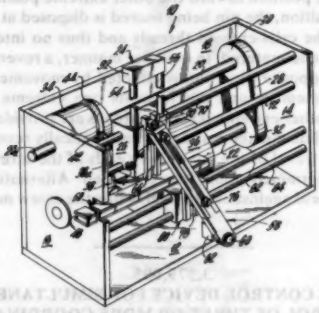
The mechanism comprises a one-piece crosshead and a one-piece auxiliary drive member coupled together for mutual reciprocation, although with a space therebetween, by tensioning tie rods. The crosshead receives a crankshaft connecting rod, the crankshaft being rotatably journaled in a mechanism housing, and the connecting rod being coupled to the crosshead through oversize crosshead pins which oscillate with the translating connecting rod. Replaceable vertical and horizontal guide assemblies effect and maintain planar alignment between the crosshead and drive member.

3,779,089

ADJUSTABLE MOTION TRANSMITTING DEVICE

Earl Beezer, One Andrea Blvd., Saddle Brook, N.J.

Filed Mar. 27, 1972, Ser. No. 238,495
Int. Cl. F16h *25/08*
U.S. Cl. 74—53 14 Claims



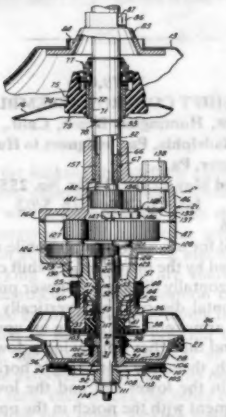
A motion transmission device includes a first shaft having a first cam thereon which is rotated in timed relationship to a second shaft having a second cam thereon, a slide holder is guided in a housing for movement in a first direction, for example an X-direction, and a slide carried on the slide holder is mounted thereon for movement in a second direction, or Y-direction. A lever is pivotally mounted on the housing and has a first follower connected to the slide and a second pivotal follower which is connected to a drive slide which is movable in a direction parallel to the slide holder, but at a spaced location therefrom. A second cam is rotatably mounted on a shaft and the second follower is moved by the second cam in order to oscillate the lever, and to thus cause the slide holder to move backwardly and forwardly in the X-direction. A crank is pivotally mounted in the housing and is provided with a follower arm which is engaged with the first cam and has an opposite arm with a follower which is engaged with a yoke member carried by the slide to move the first slide member in a Y-direction.

3,779,090

WASHING MACHINE

Ramon K. Ostenberg, and Richard P. Case, both of Webster City, Iowa, assignors to Franklin Manufacturing Company, St. Cloud, Minn.

Filed Apr. 28, 1972, Ser. No. 248,401
Int. Cl. F16h *21/40*
U.S. Cl. 74—81 6 Claims



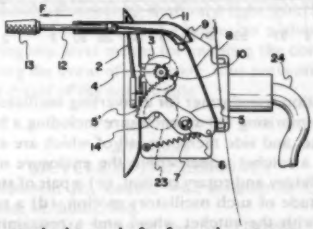
A power drive in a washing machine oscillates an agitator with a positive drive and spins a basket with a limited torque for gradual spin-up. The arrangement includes a transmission for selectively driving either the agitator or the basket as determined by the direction of rotational input. The drive to the transmission includes a one-way clutch adapted to positively drive the transmission in the agitation direction and a slip clutch to drive the bakset with a predetermined torque in the opposite spin direction. A rotatable housing of the transmission forms both a sealed enclosure and a rigid structure in which a gear train is mounted. The housing has two mating sections in each of which are mounted spatially independent gear sets connected by a common pivotal link whereby critical gear center to center distances between housing sections are eliminated.

3,779,091

ODOMETER RESET MECHANISM

Shiro Inoue, 26, 2-2-chome, Kashiwaza, Ageo, Japan

Filed Apr. 13, 1972, Ser. No. 243,581
Int. Cl. F16h *21/44*
U.S. Cl. 74—109 1 Claim



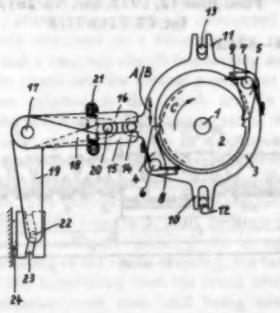
A pinion attached to a shaft of an odometer engages a segment pivoted to one side of a speedometer casing. Said segment is forced to rotate by pulling foreward a cable connected to the segment against the action of a spring whereby one complete rotation of the shaft is made to effect resetting of the odometer.

3,779,092

FILM WINDING MECHANISM FOR MOTION PICTURE APPARATUS

Kurt Bode, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Apr. 14, 1972, Ser. No. 244,142
Claims priority, application Germany, Apr. 24, 1971, P 21 20 188.7
Int. Cl. F16h *29/00*
U.S. Cl. 74—122 8 Claims



A pawl and ratchet drive for the take-up spool of a motion picture camera or motion picture projector, the pawls being driven through a form-locking train including a pair of jaws spring-urged toward each other, embracing a driven pin on a pawl carrier. When the film has been wound to the desired

tension, the driving mechanism can continue its normal full stroke without causing full stroke movement of the driven pin on the pawl carrier, so that the film is not wound too tight. In one embodiment, a pair of driving pawls are pivotally mounted on the pawl carrier. In another embodiment, the two pawls are integral with a pawl ring which is swingably mounted on the pawl carrier.

3,779,093

MOTION TRANSFORMER

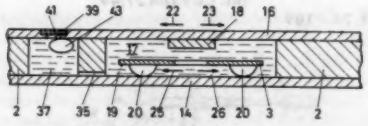
Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt et Frere S.A., Bienne, Switzerland

Filed May 25, 1972, Ser. No. 256,721

Claims priority, application Switzerland, June 14, 1971, 8621/71

Int. Cl. F16h *27/02*

U.S. Cl. 74—142 **17 Claims**



In a motion transformer for converting oscillatory to rotary motion, comprising (a) an enclosure including a base plate, a cover plate, and side members, all of which are substantially rigid, (b) a ratchet wheel within the enclosure mounted for both oscillatory and rotary motion, (c) a pair of stops limiting the amplitude of such oscillatory motion, (d) a ratchet pawl coacting with the ratchet wheel and a restraining member preventing retorgrade rotation thereof to convert oscillatory motion thereof to unidirectional rotary motion, and (e) a liquid filling the space in said enclosure, an expansion chamber is provided adjacent the enclosure in communication therewith through a capillary channel and is partially gas-filled to accommodate thermal expansion and contraction of the liquid. Such apparatus is made by immersing it in the liquid, subjecting the liquid to high vacuum to withdraw air, then restoring atmospheric pressure to drive the liquid into the apparatus, then heating the apparatus to above its maximum expected operating temperature followed by cooling to allow the liquid to contract and cause some air to enter the expansion chamber, and then hermetically sealing the apparatus.

3,779,094

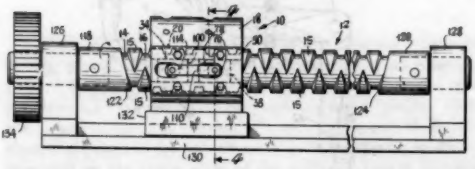
REVERSING NUT FOR A DIAMOND THREAD SCREW

Berger A. La Barre, Bethel, Conn., assignor to Norco, Inc., Ridgefield, Conn.

Filed June 12, 1972, Ser. No. 261,603

Int. Cl. F16h *1/18*

U.S. Cl. 74—424.8 R **20 Claims**



A reversing nut for use with a diamond thread screw having criss-crossed threads. The nut has an annular body and includes a through bore to receive the screw. A fixed pin extends part way into the bore for engagement with the screw threads. The nut is further provided with a pair of movable pins extending into the bore, also engageable with the screw threads. The movable pins are mounted on slide members which are carried by the nut, the slide members being movable between limiting or extreme positions in directions parallel to the axis of the nut. A reversal of the direction of travel of the nut can be effected at predetermined intervals along the length of the screw by moving one slide member and pin from one extreme position toward the other extreme position. During the transition, the pin being moved is disposed at an intersection of the criss-crossed threads and thus no interference therewith is encountered. In a similar manner, a reversal of the nut in the opposite direction is effected by movement of the same slide member and pin from its one extreme position toward the other extreme position. Means are provided for actuating the slide members and thus automatically reversing the direction of travel of the nut at both ends of the screw as well as at predetermined points therebetween. Alternatively, the nut can be held against axial travel, while the screw moves axially.

3,779,095

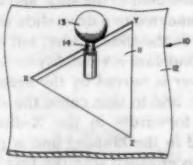
SINGLE CONTROL DEVICE FOR SIMULTANEOUS CONTROL OF THREE OR MORE COORDINATE FUNCTIONS

Jean P. Audet, 138 Mountain Ave., Summit, N.J.

Filed Jan. 3, 1972, Ser. No. 214,583

Int. Cl. G05g *9/04*

U.S. Cl. 74—471 XY **5 Claims**



A single control device for simultaneously controlling three coordinate functions is provided. The device comprises a shaft mounted in a base. The movement of the shaft is limited by the opening in a control surface having a multi-apex angle opening. An operating plate secured to the shaft functions to move motion transmitting control elements positioned in alignment with the apex angles of the opening in the control surface in an amount corresponding to the relative position of the control shaft to the apex angles in the control surface. The device is particularly suitable for use in video color mix control.

3,779,096

SHIFT CONTROL ASSEMBLY

George H. Hurst, Huntington Beach, Calif., and Emanuel F. Cambria, Philadelphia, Pa., assignors to Hurst Performance, Inc., Warminster, Pa.

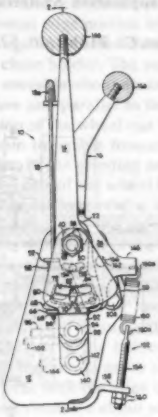
Filed May 22, 1972, Ser. No. 255,397

Int. Cl. G05g *9/16, 5/02*

U.S. Cl. 74—476 **28 Claims**

A shift control for use with an automobile manual transmission characterized by the provision of a shift control lever connected to a horizontally disposed follower pin which tracks in generally horizontal disposed and vertically offset slots of a pair of selector arms, one slot having an upwardly extending vertical notch and the other slot having a downwardly extending vertical notch, the upper slot being in horizontal alignment with the notch in the lower slot and the lower slot being in horizontal alignment with the notch in the upper slot. The follower pin is normally biased downwardly and the surfaces of the slots and notches are such as to urge the pin from the

upper slot and the upper notch of the lower slot, into the lower notch of the upper slot and the lower slot, when the pin is moved from the leading edge of the upper slot towards the trailing edge thereof. By this arrangement, the gears of the



transmission may be shifted through different speeds by moving the lever in a planar path of travel.

Also a separate reverse gear control is provided which is operable only when the system is in a neutral mode.

3,779,097

MECHANISM FOR LOCKING SHIFTING MEMBERS IN CHANGE-SPEED TRANSMISSIONS

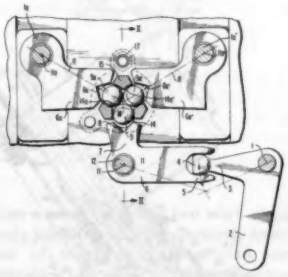
Dietrich Kurz, Stuttgart, and Gerhard Oser, Oeffingen, both of Germany, assignors to Daimler-Benz, AG, Stuttgart-Unterluerkheim, Germany

Filed May 19, 1972, Ser. No. 254,927

Claims priority, application Germany, May 21, 1971, P 21 25 278.8

Int. Cl. G05g *5/10*

U.S. Cl. 74—477 **14 Claims**



A mechanism for locking the shifting elements in change-speed transmissions, especially in motor vehicle change-speed transmissions, in which, for example, three shifting shafts are provided, each carrying a shifting rocker arm having a pivot arm portion which actuates the locking mechanism by way of three pivotal locking levers which are thereby arranged at least axially symmetrical about a common center point and which are provided each with a notch facing three similarly arranged balls which in the neutral position can engage in a respective notch; the pivotal movement of a locking lever thereby forces the associated ball out of its notch and the thus displaced ball, in turn, then forces the other two balls into the other notches of the two other locking levers or retains the same within these notches, if they should be already present in these other notches.

3,779,098

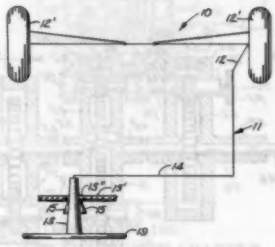
RIGHT HAND STEERING MECHANISM FOR VEHICLES

William Joseph Falzon, 9619 Stout, Detroit, Mich.

Filed June 16, 1972, Ser. No. 263,549

Int. Cl. B62d *1/18*

U.S. Cl. 74—492 **3 Claims**



A steering mechanism for automobiles. This mechanism consists primarily of a steering shaft on a right hand side of the automobile with shaft connecting means to a short steering column having trip lever means for enabling the column to go forward during the event of a collision, thus preventing serious injury to the driver of the automobile.

3,779,099

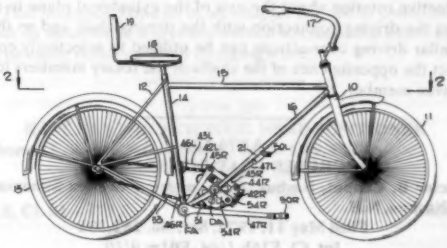
BICYCLE DRIVE ASSEMBLY

Earl M. Trammell, Jr., Ladue, Mo., assignor to Cycle-Drive Corporation, St. Louis, Mo.

Filed Feb. 28, 1972, Ser. No. 229,898

Int. Cl. B62m *3/04*

U.S. Cl. 74—594.3 **17 Claims**

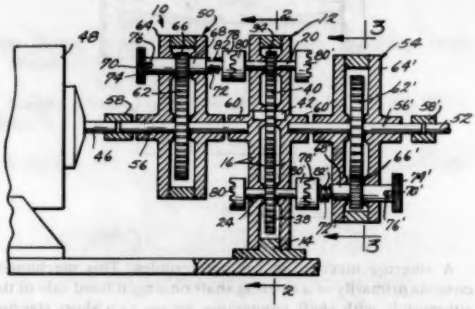


A drive assembly for a physically propelled vehicle such as a bicycle having a crank arm operatively connected to a drive member rotatively mounted on a drive axis for rotating the drive member, and a one-way clutch connecting an advance-crank arm to the crank arm for pivotal movement of the advance-crank arm relative to the crank arm in only one direction. A pedal arm is operatively connected to the connector for substantially moving a portion of a connector with an alternating motion of less than 360° in a predetermined path. A resilient spring interconnects the connector and the advance-crank arm. The connector transmits the turning force to a pivot between the connector and advance-crank arm upon application of sufficient pedal force to overcome a predetermined loading of the resilient spring, the turning force being automatically transferred from the crank arm pin to the pivot of the advance-crank arm, and being automatically transferred back to the crank arm pin upon further rotation of the crank arm and advance-crank arm as the loading of the resilient spring balances and overcomes the pedal force. When the predetermined loading of the resilient spring is overcome, a change in the angle between the connector and advance-crank arm is achieved.

3,779,100
VARIABLE SPEED TRANSMISSION

Richard Schmidt, 11525 Islandale Dr., Cincinnati, Ohio

Filed Sept. 8, 1972, Ser. No. 287,481
Int. Cl. F16h *37/06, 3/08*
U.S. Cl. 74—665 N 22 Claims

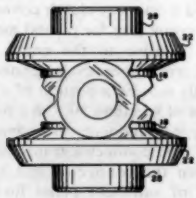


A multiple speed transmission assembly wherein a plurality of drivingly interconnected rotary members are mounted within a central housing in a geometrical arrangement in which the axis of rotation or shafts of the rotary members are spaced circumferentially about a cylindrical plane in equally spaced parallel relation to the axis of the cylindrical plane so that a driving member can be selectively drivingly connected to one end of any of the rotary member shafts by either positioning the axis of the cylindrical plane in line with the driving shaft and utilizing a pair of meshing gears or the like as the driving connection or mounting the cylindrical plane in line with the driving shaft and mounting the central housing for selective rotation about the axis of the cylindrical plane to effect the driving connection with the driving shaft and so that similar driving connections can be utilized to selectively connect the opposite ends of the shafts of the rotary members to a driven member.

3,779,101
POCKETED GEAR DIFFERENTIAL

Victor B. Chaput, Nashua, N.H., assignor to Alex Simoneau, Nashua, N.H.

Filed May 11, 1972, Ser. No. 252,302
Int. Cl. F16h *1/44*; F01m *9/10*
U.S. Cl. 74—711 11 Claims

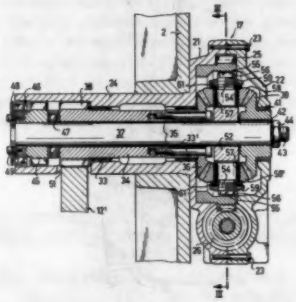


A pocketed gear differential has conventional side gears modified with a plate connectd to the toe and a sleeve arranged about the heel thereof whereby a pocket is formed so that a lubricant entrapped within the meshing gears of the differential cannot readily escape from the sides of the meshing gears and is available to resist rapid movement of the gears to provide a limited slip action.

3,779,102
DIFFERENTIAL GEAR

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Mar. 22, 1972, Ser. No. 237,093
Claims priority, application Switzerland, Mar. 26, 1971, 004503/71
Int. Cl. F16h *1/40, 57/00*
U.S. Cl. 74—713 5 Claims

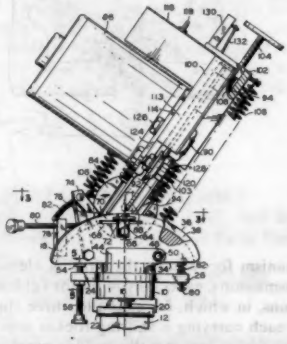


The two warp beams are each connected to different bevel gears in the transmission. These bevel gears are in meshing engagement with two planet pinions mounted in a freely mounted carrier. The carrier is, in turn, mounted in diametrically opposite slots in a driving wheel for the transmission. The driving wheel is driven over a worm. Any variation in speed between the warp beams causes the planet pinions to turn relative to the bevel gears to compensate for the variation without overstressing the gears.

3,779,103
CHIPPER CHAIN GRINDER

Elmer R. Silvey, Rt. 1, Box 138, Eagle Point, Oreg.

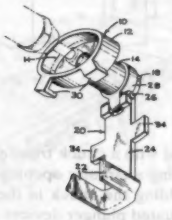
Filed Sept. 20, 1971, Ser. No. 181,957
Int. Cl. B23d *63/16*
U.S. Cl. 76—25 A 9 Claims



A disc shaped grinding wheel having a rounded edge for sharpening chipper saw chain is mounted on the shaft of a motor supported so that the faces of the wheel are inclined downwardly and to one side of a saw chain grinding machine. A vertically disposed saw chain holder positioned below the wheel has a convex upper edge with a slot therein for receiving the drive lugs of a saw chain which is positioned on the holder with the front of the cutter elements directed toward the other side of the machine. An adjustable pawl holds a cutter element

in a central uppermost position on the holder for grinding engagement by the lowermost portion of the edge of the wheel. The support for the holder is pivoted about a vertical axis passing through the area of such grinding engagement so that the holder is pivotally movable between two adjustable positions for grinding right and left cutter elements. The wheel normally has its lowermost edge portion in a grinding position between the depth gauge and cutter element of a saw chain cutter link on the saw chain holder. The support for the motor and wheel is pivotally movable about an axis at the rear of the machine, which is below and parallel to the axis of the wheel, so that such edge portion of the wheel can be moved upwardly away from the saw chain to enable forward movement of the saw chain on the holder. In the grinding position of such edge portion of the wheel the axis of the wheel is in a vertical plane through the vertical pivotal axis of the support for the saw chain holder. The support for the motor is also slidably mounted so as to enable movement of the axis of the wheel in such vertical plane in a direction parallel to the faces of the wheel to adjust for wear of the edge of the wheel. The holder for the saw chain is pivoted about a horizontal axis spaced from the vertical pivotal axis of its support and a lever enables tilting of the central portion of the holder upwardly and forwardly of the saw chain thereon to move a cutter element into such grinding engagement with the edge of the wheel. A disc shaped dressing element rotatable about an axis parallel to the axis of the wheel and having an edge complementary to the desired rounded edge of the wheel is supported for movement in a direction parallel to the faces of the wheel and the dressing element to bring the edge of the dressing element into dressing contact with the edge of the wheel.

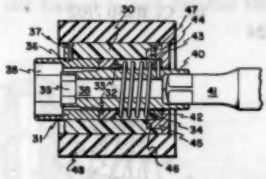
3,779,104
DUAL FUNCTION WRENCH
James R. Curry, 4276 Latimer Ave., San Jose, Calif.
Filed Mar. 3, 1972, Ser. No. 231,599
Int. Cl. B25b *13/48*
U.S. Cl. 81—119 **5 Claims**



A dual function wrench including two work-engaging members cooperatively joined to enable selectively individual rotative application of torque or alternatively conjoint interengaged application of torque to different sections of a single piece of work.

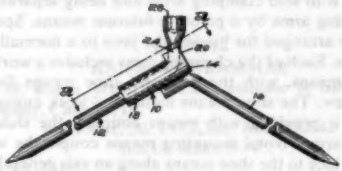
3,779,105
FASTENER TOOL
Lee Triplett, Magna, and Wilmer R. Peterson, Kearns, both of Utah, assignors to Expando Products Company, Salt Lake City, Utah
Filed July 27, 1972, Ser. No. 275,714
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R **7 Claims**

A fastener tool, for use with special fasteners, comprising a sleeve rigidly secured in a housing having a head engaging end extending from the housing, a socket rotatably secured in the sleeve and housing having apertures at both ends and being



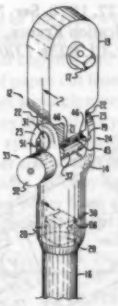
biased into the housing by a spring, and a cover surrounding the housing.

3,779,106
WHEEL WRENCH ADAPTER
Roland Cavicchi, 118 Phipps St., Quincy, Mass.
Filed Apr. 24, 1972, Ser. No. 246,553
Int. Cl. B25b *13/00*
U.S. Cl. 81—177 B **5 Claims**



This invention consists in an adapter for use in connection with an automobile wheel tire wrench to enable the wheel nuts to be easily removed when changing a tire.

3,779,107
RATCHET WRENCH TOOL HEAD POSITIONER
Thomas L. Avery, P.O. Box 867, Tahoe City, Calif.
Filed Oct. 19, 1972, Ser. No. 299,101
Int. Cl. B25b *13/00*
U.S. Cl. 81—177.8 **5 Claims**



The depending stud of a ratchet tool head is pivotally mounted between the fork arms of a tool holder attachable to a wrench handle. A plurality of spaced transverse grooves in the stud is selectively engageable with and disengageable from a transverse lock pin located adjacent the stud depending upon the angular position of the lock pin. The lock pin is removably held in selected position by a ball detent.

3,779,108

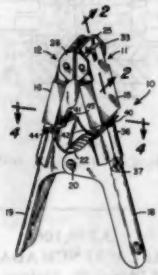
CLAMP

John J. Reiter, 6521 Stevens Ave., South, Minneapolis, Minn.

Filed May 19, 1971, Ser. No. 144,819

Int. Cl. B25b 7/02

U.S. Cl. 81—424 7 Claims



Clamping means comprising a pair of opposed gripping jaws adapted to open and close upon a workpiece interposed therebetween. The apparatus includes a pair of clamping arms with a pair of cooperating actuating handle portions in axial extension with said clamping arms and being separated from the clamping arms by a pivoting fulcrum means. Spring bias means are arranged for biasing the jaws to a normally closed disposition. Each of the clamping arms includes a work retaining shoe means, with the arm and shoe means forming a gripping jaw. The shoe means includes a work engaging surface and is provided with means coupling the shoe to the clamping arm. Pivotal mounting means couple the work engaging surface to the shoe means along an axis generally transverse to the elongated axis of the clamping arm, and generally parallel to the pivot axis of the fulcrum means. The shoe means are provided with connecting rod means for securing the shoe means to the clamping arms, the connecting rod means being journaled for axial rotation about the elongated axis of the clamping arms, with said axial rotation being generally transverse to the axis of said pivotal mounting means and said pivoting fulcrum means, thus permitting alignment of the work engaging surfaces relative to the axis of the jaw.

3,779,109

DEVICE FOR MACHINING A WORKPIECE BY A TURNING OPERATION

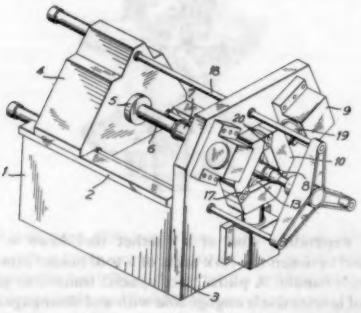
Pierre Antoine Theophile Gibert, 16, rue d'Espourrins, Tarbes, France

Filed Mar. 27, 1970, Ser. No. 22,783

Claims priority, application France, Mar. 27, 1969, 6909026

Int. Cl. B23b 13/02

U.S. Cl. 82—2.5 8 Claims



A device for machining a workpiece comprises two or more jacks fastened on a plate carrying tool holders arranged around and centered on a mandrel spindle carrying the workpiece, the tool holders bearing on packing inserts interposed between adjacent tool holders and secured to the plate. The position of the tools in the tool holders is controlled by abutment of the tool holders on the packing inserts, the thickness of which determines the machined diameter of the workpiece.

3,779,110

LATHES WITH CHUCK TRANSFER MECHANISM

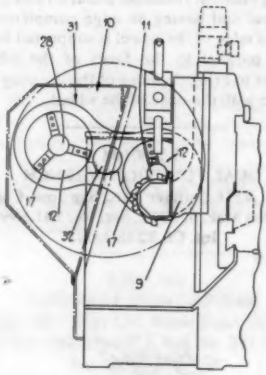
Julius Harman, Baginton, and Michael Eric Norman, Holly Croft, both of England, assignors to Alfred Herbert Limited, Coventry, England

Filed Apr. 8, 1971, Ser. No. 132,523

Claims priority, application Great Britain, Apr. 10, 1970, 17,118/70

Int. Cl. B23b 13/02

U.S. Cl. 82—2.5 13 Claims



A lathe is provided with a chuck transfer mechanism which includes a head having a circular opening to receive a chuck for transfer. For holding the chuck in the opening there is a plurality of fluid actuated plunger devices around the opening with the devices interconnected to permit displacement of fluid from one device to another. This allows transverse movement of the chuck relative to the head to allow a toothed locating device on the chuck to align itself accurately with a complementary toothed locating device on the work spindle.

3,779,111

PUNCH MECHANISMS

Eric Bailey, Letchworth, England, assignor to International Computers Limited, London, England

Filed Aug. 13, 1971, Ser. No. 178,516

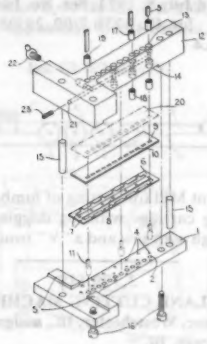
Claims priority, application Great Britain, May 26, 1971, 17,227/71

Int. Cl. B26d 7/06

U.S. Cl. 83—23 2 Claims

A punch mechanism for record members is disclosed which includes a die assembly consisting of a thin plate having a plu-

rality of apertures therein for co-operating with a plurality of punches. The thin plate is bonded to a bolster which supports



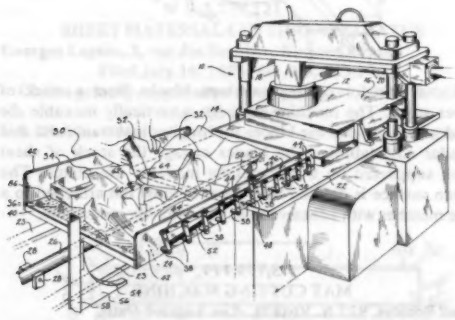
it over its unperforated area. The walls of the apertures in the thin plate are hardened and the remainder of the plate is relatively soft.

3,779,112

POP-UP DELIVERY TABLE FOR PAPER CUTTING PRESS

Raymond G. Vallier, Brookfield, Wis., assignor to Western States Envelope Company, Milwaukee, Wis.

Filed May 22, 1972, Ser. No. 255,722
Int. Cl. B26d *7/06*
U.S. Cl. 83—103 **7 Claims**



A paper cutting press has a cutting die and a cutting board for making laterally spaced die cuts through a lift of paper to provide laterally-spaced stacks of blanks separated by waste. A delivery table, which is mounted adjacent to the cutting board for receiving the die cut lift of paper, has a plurality of spaced projectable and retractable cam fingers which are each positioned to engage beneath a stack of blanks to lift a corner of the stack above the level of the cut waste which is between the stacks of blanks so that the stacks of blanks can be easily separated from the waste.

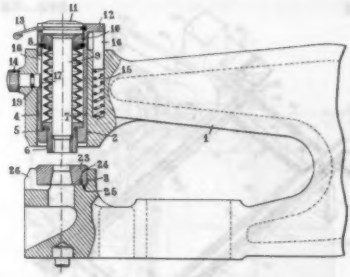
3,779,113

PUNCHING UNIT

Paul Jestin, 79-bis Avenue du General Leclerc, Pantin, France

Filed Aug. 5, 1971, Ser. No. 169,259
Claims priority, application France, Mar. 4, 1971, 7107458
Int. Cl. B26d *7/06, 1/00*
U.S. Cl. 83—140 **6 Claims**

A punching unit of the type comprising a C-shaped body has the punch and die disposed coaxially at the outer ends of its arms. A stop member limiting the upward stroke of the external sleeve, having a punch slidably mounted therein is, fitted in a transverse bore formed in the outer end of the upper arm of the body of the punching unit and engages a longitudinal slot formed in said external sleeve. The stop



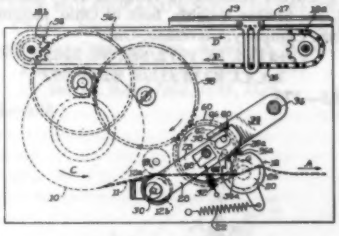
member is retained in said bore by an expansion ring. A striker plate or punch head capping the upper portion of the external sleeve is secured to the flange constituting the upper portion of the sleeve by means of a retaining spring. Thus, the punch can be fitted and removed without resorting to any screwing or unscrewing operation.

3,779,114

KNIFE PROGRAMMER

Albert M. Rabin, Wood Dale, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Mar. 30, 1972, Ser. No. 239,543
Int. Cl. B26d *5/24*
U.S. Cl. 83—205 **7 Claims**



A copying machine of the type which uses copy paper from a supply roll is provided with a system for adjusting the relative positions of timed copying and cutting cycles for varying the length of sheets of paper cut from the roll for each copying cycle. The system uses a clutch mechanism in the drive to the cutter assembly to vary the cutter cycle position relative to the printing cycle. The system is responsive to a selector for selecting desired paper size so that the selected size is cut.

This invention relates to copying machines which cut individual sheets of copy paper from a supply roll and more particularly relates to a control system for controlling the cutting operation.

3,779,115

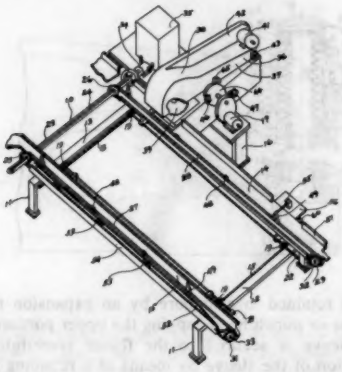
NOTCHING MACHINE

William Lewis Talbert, York, Pa., assignor to Canton Company of Baltimore, Baltimore, Md.

Filed Nov. 26, 1971, Ser. No. 202,157
Int. Cl. B26d *5/20*
U.S. Cl. 83—210 **2 Claims**

This panel notching machine comprises a trackway along which synchronously moving chains push a panel under a

reciprocating cutter head. Power is applied to the chains by an hydraulic motor. Stopping the oil flow stops the chain motion so precisely that panels can be notched by a reciprocating cutter head and will interfit with any other panels to form a



corner joint in a crate or shipping container. Besides notching, the machine will position parts for boring or for any other machining operation which must take place at fixed linear distances.

3,779,116

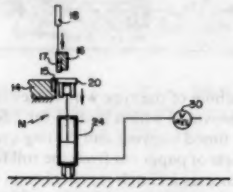
SHEARING APPARATUS

William I. Curtis, Middleburg Heights, and Augustus C. McDaniel, Jr., Shaker Heights, both of Ohio, assignors to The Hill Acme Company, Cleveland, Ohio

Filed Feb. 16, 1972, Ser. No. 226,688

Int. Cl. B23d *33/08*; **B26d** *7/02*

U.S. Cl. 83—378 **2 Claims**



A shearing machine for shearing a workpiece with relatively low power and without attendant curling. The machine includes a pair of knives mounted on a frame with one of the knives being relatively movable toward and away from the other. Also included is a yieldable workpiece support anvil disposed adjacent the stationary blade and below the movable knife for supporting a generally planar workpiece while it is being sheared. The workpiece support anvil is yieldably mounted to effect a constant, even, equal, yield resistance for the anvil in opposition to the movable knife as the workpiece is sheared. One form of such mounting is a pair of piston-cylinder mechanisms supporting the anvil, such mechanisms having suitable control means so that the anvil provides a constant even resistance throughout the shearing operation, thereby preventing curling of the workpiece.

3,779,117

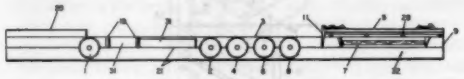
SLAB AND CANT MILL

Richard E. Roberson, Dubach, and Richard E. Roberson, Jr., New Orleans, both of La.

Filed July 8, 1971, Ser. No. 144,054

Int. Cl. B27b *7/00, 29/08*

U.S. Cl. 83—404.4 **8 Claims**



A Slab and Cant Mill for cutting of lumber from whole logs and having a log carriage with log dogging device, multiple saws, a cant trough with saw and a "V" trough.

3,779,118

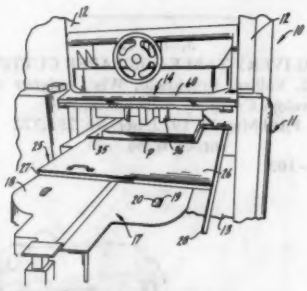
BLANK CUTTING MACHINE

Charles E. Habanec, Westchester, Ill., assignor to Moser Paper Company, Chicago, Ill.

Filed Aug. 24, 1971, Ser. No. 174,391

Int. Cl. B26d *7/06, 7/26*

U.S. Cl. 83—437 **3 Claims**



A machine for cutting envelope blanks from a stack of paper stock. The machine includes a vertically movable die head which mounts die blades for longitudinal transverse and angular adjustability. The blades engage the stack of sheet stock supported on a horizontally movable die platen. The platen surface is defined by a sheet of vinyl tile attached to a base member with adhesive so as to be readily removable.

3,779,119

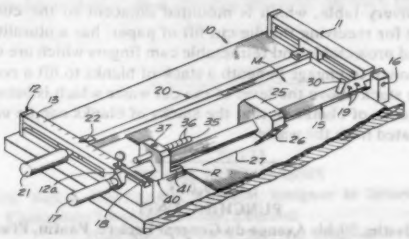
MAT CUTTING MACHINE

Israel Broides, 927 N. Vista St., Los Angeles, Calif.

Filed Oct. 16, 1972, Ser. No. 297,653

Int. Cl. B26d *5/08, 7/16, 7/26*

U.S. Cl. 83—581 **4 Claims**



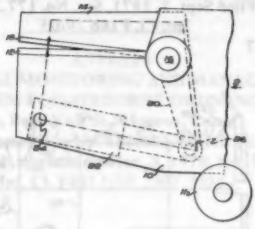
A picture mat cutter which is provided with a number of adjustable stops and guides such that once the machine is adjusted, a quantity of identical mats may be cut with uniform borders on all four of their sides without readjusting the machine.

3,779,120

METAL SHEARING MACHINES

Kenneth Horace Strawson, Grenoside, England, assignor to W. E. Burnand & Son Limited, Sheffield, England

Filed Mar. 6, 1972, Ser. No. 232,133
Claims priority, application Great Britain, Mar. 10, 1971, 6,479/71
Int. Cl. B26d 5/12
U.S. Cl. 83—601 2 Claims



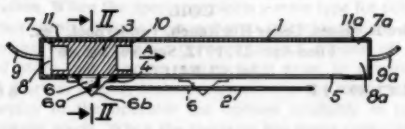
A metal-shearing machine including a fixed jaw and a movable jaw the latter being constituted by one arm of a member in the form of a bell-crank lever the other arm of which extends downwardly and is connected to one end of a hydraulic piston and cylinder assembly the other end of which is pivotally connected to structure immediately beneath the fixed jaw.

3,779,121

SHEET MATERIAL CUTTING APPARATUS

Georges Lagain, 3, rue des Sorbiers, Ermont, France

Filed July 16, 1971, Ser. No. 163,273
Claims priority, application France, July 21, 1970, 7026865
Int. Cl. B26b 5/12
U.S. Cl. 83—614 5 Claims



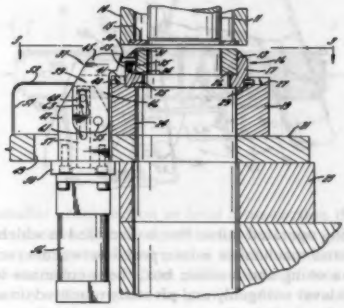
This invention relates to apparatus for cutting sheet material, particularly material in sheath form for manufacturing bags. A cutting blade is detachably secured to a movable member which is arranged for movement over a rectilinear guide member that is fixed to a support, and this movable member is constituted by a double piston which is mounted to slide in a tube. The tube is shaped to offer at each of its ends a cylinder which forms, with the adjacent face of the piston, a chamber of varying size arranged to be supplied with operating fluid under pressure, through at least one conduit that discharges into the chamber. In one form, the tube is longitudinally slotted to receive a part of the movable member and this part extends outside the tube and carries the cutting blade. In another form, the guide member is constituted by a rail on which slides a carriage that comprises the movable member and carrying the double piston for alternate engagement by its two ends in two cylinders that are arranged at the two ends of the rail.

3,779,122

PUNCH PRESS WITH ASSEMBLY LOCKING MECHANISM

Roger V. Sawvell, New Milford, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed July 24, 1972, Ser. No. 274,256
Int. Cl. B26d 1/06
U.S. Cl. 83—698 11 Claims



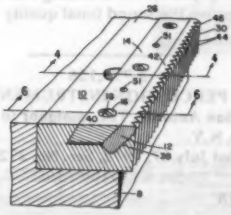
The die assembly is clamped to a die shoe by a locking arm which, when released, permits the assembly to be inserted into and removed from the shoe in a horizontal direction in order to avoid the vertical obstruction presented by a stripper overhanging the shoe. The arm is clamped and released by a vertically reciprocable rod carrying a pin which rides in an inclined slot in the arm to convert the vertical force exerted by the rod into a horizontally directed clamping force of relatively large magnitude.

3,779,123

KNIFE HOLDER AND KNIFE THEREFOR

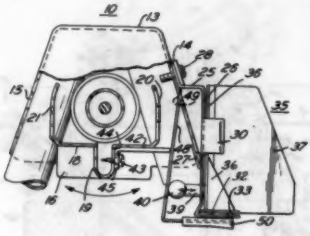
George G. Chafee, Narragansett, R.I., assignor to Cumberland Engineering Company, Inc., Attleboro, Mass.

Filed Oct. 16, 1972, Ser. No. 297,897
Int. Cl. B26d 1/02, 1/38, 7/26
U.S. Cl. 83—698 12 Claims



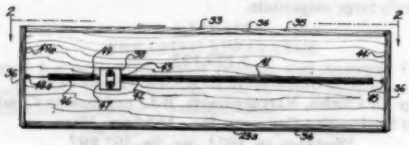
A knife holder and knife therefor to be used on a machine for dicing or cutting plastics, the knife holder being an elongated body having a channel therein, the channel being shaped to hold an elongated insertable knife blade against the front wall of the channel, and an elongated wedge mounted between the knife and the back wall of the channel to clamp the knife securely in the knife holder. The walls of the channel are divergent from each other. The cooperation between the knife, wedge, and front and back walls of the channel is such that wedge-fastening screws or bolts have reduced forces acting on them. In a second embodiment, means are also provided whereby regound or replacement knives may be fitted into the knife holder with a minimum of adjustment necessary in respect to the fly knives of the machine.

3,779,124
SWING OPERATED MUSIC BOX
Walter L. Christensen, Pottstown, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.
Filed Sept. 7, 1972, Ser. No. 287,065
Int. Cl. G10f 1/06
U.S. Cl. 84—94 C 4 Claims



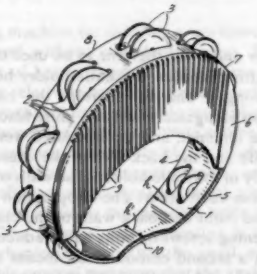
A swing operated music box is disclosed in which operating and control mechanism is interposed between a reciprocating part of a swing and a music box, the mechanism including a resilient lever swingably and pivotally mounted on a fixed part of the swing.

3,779,125
SYMPATHETIC PIANO SOUND AUGMENTER
John W. Quitmeyer, 400 Oak St., Rochester, Mich.
Filed June 30, 1972, Ser. No. 268,059
Int. Cl. G10c 3/06
U.S. Cl. 84—189 4 Claims



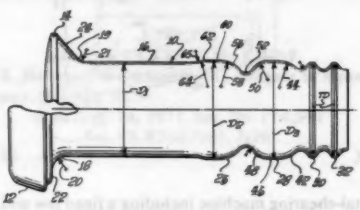
The purpose of this invention is to provide additional force from the impact of the hammer of a percussion instrument on a string associated therewith by providing a sympathetically vibrating means to act on the sounding board area of such instrument to improve the sound tonal quality and resonance of the instrument.

3,779,126
PERCUSSION INSTRUMENT
Fred A. Hoey, San Antonio, Tex., assignor to C. Bruno & Son, Inc., Melville, N.Y.
Filed July 17, 1972, Ser. No. 272,300
Int. Cl. G10d 13/02
U.S. Cl. 84—418 9 Claims



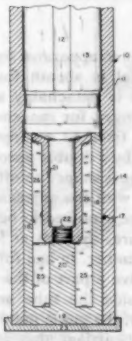
A percussion instrument comprising an annular rim having a plurality of openings distributed around the wall thereof, a plurality of jingles within said openings, a soundboard comprising a relatively large flat member fastened across one end of said rim and covering only a given portion of the available surface area enclosed by said one end of said rim, a plurality of markings in the uppermost surface of said soundboard, and a hand-hold means defined on said rim at a circumferential region of said rim.

3,779,127
STRESS COINING BOLT
Eugene R. Speakman, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Sept. 2, 1971, Ser. No. 177,326
Int. Cl. F16b 19/05
U.S. Cl. 85—7 5 Claims



A bolt for minimizing the stress concentration generated by an aperture in metallic structure. The bolt includes a hard and rigid elongated shaft adapted for forcible insertion through the aperture. The shaft is provided with a plurality of different diameter annular protuberances at one end and a bolt head at the other. The largest protuberance is usually closest to the bolt head and has a diameter of a predetermined relationship to the diameter of the aperture so that upon forced insertion therethrough, the material forming the wall of the aperture is plastically displaced radially outward substantially one-half the difference between the diameter of the largest protuberance and the original diameter of the aperture. The length of the shaft between the largest protuberance and the bolt head may be just less than the depth of the aperture so that radii on the bolt head and on the last protuberance additionally stress the edges of the aperture to further improve the fatigue strength of the metallic structure.

3,779,128
MORTAR WITH ELECTRO-MAGNETIC RETAINING COIL
Pedro B. Pelaez, Cedar Hill Ranch, Vanderpool, Tex.
Filed Apr. 25, 1972, Ser. No. 245,467
Int. Cl. F41f 1/06
U.S. Cl. 89—1 F 8 Claims



A mortar or short barrel weapon including a rifled barrel for propelling and rotating a projectile. The base plate, supports,

and sighting components are conventional. This invention pertains to a newly improved design for a projectile for use in combination with a mortar barrel including an electro-magnetic retention means designed to momentarily restrain the projectile in the breech of the barrel promoting burning of the propelling charge while momentarily retaining the projectile resulting in increased pressures, muzzle velocity and range. The magnetic retention means comprises a retaining coil or coils selectively activated and deactivated by a control circuit comprising switches, coils, and conductors. An alternative mechanical retaining means is suggested utilizing retaining pins employing mechanical, hydraulic, or electro-magnetic control means.

3,779,129

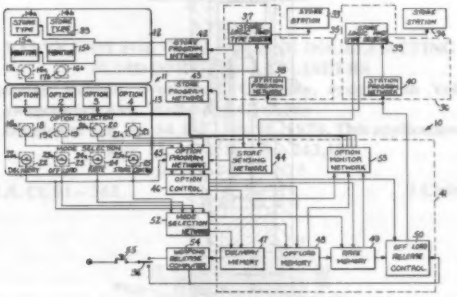
ELECTRICAL MONITORING AND MANAGEMENT SYSTEM FOR AIRBORNE ORDNANCE

Michael J. Lauro, Belle Vale St., Monroe, Conn.

Continuation of Ser. No. 535,482, March 18, 1966, abandoned. This application Mar. 3, 1970, Ser. No. 16,200

Int. Cl. F41f *5/00, 5/02, 3/04*

U.S. Cl. 89—1.5 R **19 Claims**



This disclosure relates to a system for controlling the actuation of different types of stores at various remote store stations where each store requires management in one or more operational modes prior to actuation. The type of store at each station is sensed and the store type is visually displayed at a central location. When the operator selects a store type for actuation other display means responsive to selection means and the sensing means display the operational modes of the selected store that require management prior to actuation thereof. Further display means responsive to the mode selection display to the operator the options available in each management mode. When the operator has made compatible selections in all mode options he may then actuate the selected store type.

3,779,130

LAUNCHING TUBE FOR PROJECTILES AND MISSILES RESPECTIVELY

Werner Schnabele, Wolfratshausen, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschnrankter Haftung, Munich, Germany

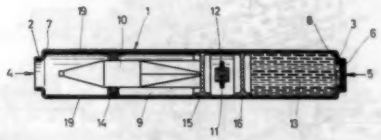
Filed Dec. 18, 1970, Ser. No. 97,479

Claims priority, application Germany, Jan. 16, 1970, P 20 01 758.7

Int. Cl. F41f *3/02*

U.S. Cl. 89—1.701 **6 Claims**

Launching tube for projectiles and missiles, respectively, in which the serviceable projectile to be launched, a propelling charge, and — in the appropriate circumstances — a filling of a flowable medium of relatively high density being separated from the propelling charge by a piston or the like are arranged axially behind each other. Immediately after the projectile left the launching tube, the latter's forward opening is closed. The pressure gases produced by the propelling charge escape from the launching tube through one or several blow-out port(s) provided for in the tube jacket and/or in the cover of the forward tube opening and/or through leaks and slots, respectively, between the cover of the forward tube opening and the tube jacket, said blow-out ports or leaks or slots having a considerably smaller cross-section or total cross-section than the caliber cross-section. The cover of the forward tube opening is preferably a pressure-resistant piston which extends over the whole cross-sectional area of the caliber and which is caught, in particular by a stop, within the portion of the forward tube opening immediately after the projectile left the launching tube. In an embodiment of the invention said blow-out ports are arranged in the tube jacket directly behind the caught piston.



3,779,131

DEVICES FOR AUTOMATICALLY FEEDING SPARE CARTRIDGE INTO THE FIRING CHAMBER OF SHOTGUNS

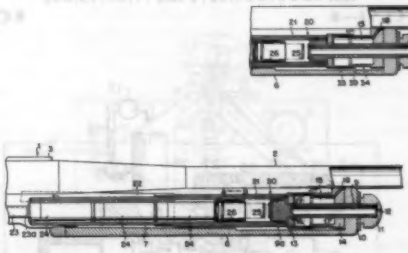
Takeji Kawamura, 1099-11 Ishinazaka-machi, Hitachi-shi, Japan

Filed Apr. 12, 1972, Ser. No. 243,284

Claims priority, application Japan, Apr. 21, 1971, 46/25271

Int. Cl. F41d *5/10*

U.S. Cl. 89—191 A **1 Claim**



A device for automatically feeding spare cartridges in the magazine tube into the firing chamber of a shotgun of the type comprising a piston mechanism for successively feeding the spare cartridge. The mechanism comprises a cup shaped piston receiver, a cup shaped piston slidable along the outer surface of the piston receiver, a shaft extending in the axial direction of the piston and the piston receiver for guiding the piston, the piston and piston receiver cooperating to define a gas chamber, a conduit for supplying the gas generated at the time of firing into the gas chamber, and means for discharging the gas from the gas chamber when the piston is moved to one of the extreme positions by the gas admitted into the gas chamber.

3,779,132

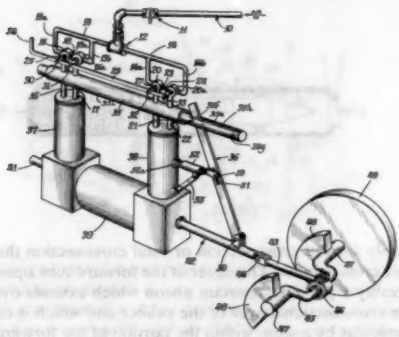
COMBINATION AIR AND HYDRAULIC MOTOR

Thomas W. Otto, 700 N. Rand Rd., Apt. A-104, Arlington Heights, Ill.

Filed July 14, 1971, Ser. No. 162,549

Int. Cl. F15b *21/04*; F01l *31/14*

U.S. Cl. 91—4 A 8 Claims



A combination air and hydraulic motor in which air under pressure is used as the primary source of power. Hydraulic liquid is used as an intermediate linkage between the air under pressure and a mechanically reciprocating arm. A spherical float acts as a coupling means to separate the air and hydraulic liquid and prevents undesirable admixture of air and liquid. Valve means for the air under pressure determines the direction of movement of the hydraulic liquid. Mechanical linkage joins the reciprocating arm and the valve means whereby the valve means is alternately shifted to move the hydraulic liquid in one direction and then the other in alternating fashion to keep the motor running.

3,779,133

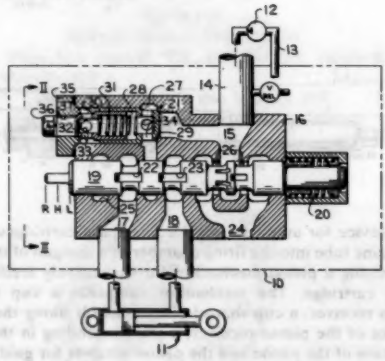
MAKE-UP VALVE FOR HYDRAULIC CONTROL CIRCUIT

Joseph E. Dezelan, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 21, 1972, Ser. No. 264,961

Int. Cl. F01b *25/02*; F15b *11/08*, *13/042*

U.S. Cl. 91—6 8 Claims



A closed reservoir is connected to a pump for delivering pressurized hydraulic fluid to a directional control selector valve operatively connected to the ends of a double-acting hydraulic cylinder. A first check valve is positioned between the pump and the selector valve to pass pressurized hydraulic fluid thereby whereas a second check or make-up valve is telescopically mounted within the first check valve in exposed relationship to the hydraulic fluid contained in the reservoir. The make-up valve opens when the fluid pressure in the reservoir exceeds a predetermined level whereby such fluid is communicated therethrough and to the selector valve.

3,779,134

NUCLEAR REACTOR CONTROL ROD DRIVES

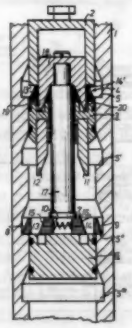
Peter Daublebsky, and Gunter Zeitzschel, both of Frankfurt, Germany, assignors to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 7, 1971, Ser. No. 150,360

Claims priority, application Germany, June 6, 1970, P 20 27 988.3

Int. Cl. F15b *15/26*

U.S. Cl. 91—44 10 Claims



A control rod drive for nuclear reactors in which the drive is actuated through a pressure medium that acts against a control piston associated with the rod and having a locking device which includes relatively movable latches that can be selectively engaged in detents in a guide tube for the piston. A second control piston is carried in axially spaced relationship to the control piston within the guide tube and has the same type of locking device. Means are provided within the guide tube to operatively interconnect the locking devices of the two control pistons in a sequential manner and to ensure that, during a movement of the drive in a direction to withdraw the control rod from the reactor, the latches of one locking device are engaged in an associated detent during a movement of the control piston crrrying the other locking device and this locking device is not disengaged until the latches of the other locking device are engaged in another detent.

3,779,135

AIR PRESSURE ACTUATOR

Nobuyuki Sugimura, 1416, Sodeshi-cho, Shimizu-shi, Japan

Filed Mar. 20, 1972, Ser. No. 236,474

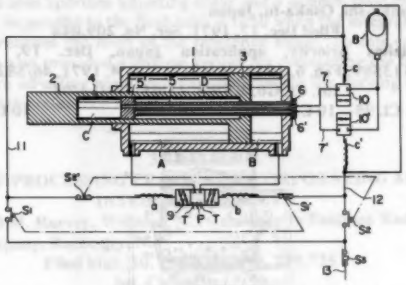
Claims priority, application Japan, Mar. 30, 1971, 46/18891

Int. Cl. F15b *15/26*

U.S. Cl. 91—45 8 Claims

An air pressure actuator comprises an air pressure cylinder having a piston slidable therein. A brake is provided at a position where the air pressure cylinder and piston make relative movement, thus stopping their movement. When the movement of the piston in the cylinder is to be halted at a predeter-

mined position, this is effected by the brake so as to constrain the piston correctly relative to the air pressure cylinder. Said brake is formed by an hydraulic cylinder and an hydraulic



piston actuated in association with relative movement of the air pressure cylinder and air pressure piston. Alternatively the brake is formed by a retractable braking element housed in the air pressure piston.

3,779,136

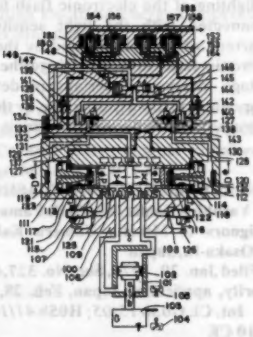
VALVE UNIT FOR CONTROLLING DOUBLE ACTING FLUID OPERATING CYLINDERS

Herman Hohlein, Wolfsburg, Germany, assignor to Volkswagenwerk Akt., Wolfsburg, Germany

Division of Ser. No. 54,915, July 15, 1970. This application Apr. 11, 1972, Ser. No. 243,102

Int. Cl. F15b *13/16*

U.S. Cl. 91—361 **2 Claims**



A system comprising a fluid motor and a valve unit having a movable slide connecting in its end positions, one side of the fluid motor to a fluid source under pressure and the other side of the fluid motor to exhaust and connecting in its central position, both sides of the fluid motor to the fluid source under pressure. Solenoid valves actuate the movable slide so that, when de-energized, the slide is caused to move into its central position so that the fluid motor is immediately supplied with fluid under pressure on both sides of the slide and retained in every intermediate and end position.

3,779,137

HYDROSTATIC TILT BOX BEARING

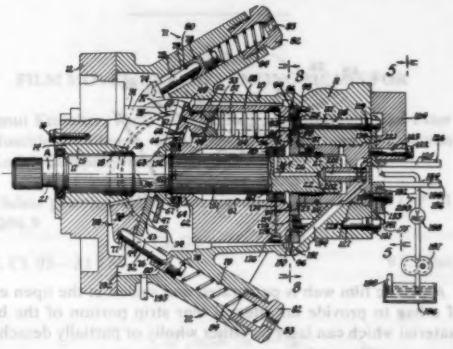
Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1971, Ser. No. 183,959

Int. Cl. F01b *13/04*

U.S. Cl. 91—489 **17 Claims**

A hydrostatic pump or motor unit of the axial piston type having a tilt box supporting the annular swash plate for reciprocating the piston in which the tilt box has a hydrostatic bearing pressurized by the power circuit pressure. The hydrostatic bearing has a semi-cylindrical bearing on each side of the machine axis and each of these semi-cylindrical hydrostatic bearings have three pressure pockets. The connections from the power circuit pressure source are arranged so that the high power circuit pressure is supplied to three pockets of



the bearing having the higher load and to one pocket of the bearing having the lower load while the low pressure is supplied to the remaining two pockets. When the operation of the machine is reversed to interchange the high and low pressure line, the pressurizing of the pockets in the cylindrical bearings is reversed to proportionally support the bearings in accordance with the load thereon.

3,779,138

CURL CORRECTOR APPARATUS FOR OPERATING ON A CONTINUOUS WEB

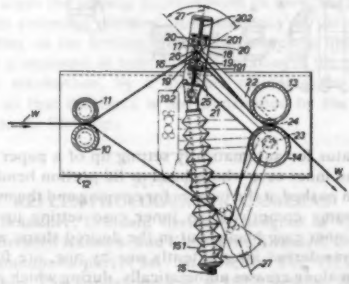
Horst Karl Lindstaedt, Bristol, and Edwin James Webb, Somerset, both of England, assignors to Masson Scott Thrissell Engineering Limited, Bristol, England

Filed Mar. 10, 1972, Ser. No. 233,511

Claims priority, application Great Britain, Mar. 10, 1971, 6,522/71

Int. Cl. B31f *7/00*

U.S. Cl. 93—1 R **6 Claims**



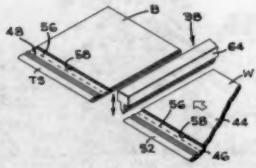
Curl corrector apparatus for operating on a continuous travelling web of paper, cardboard or like material, is arranged between two pairs of web guide rollers. Two similar curl corrector rods are rotatably mounted parallel to each other and to the web guide rollers between the latter. Means are provided for shifting these corrector rods to opposite sides of the straight line path between the guide rollers so that one or the other operates to correct curl. Support rollers back-up these corrector rods, which may also be urged together to provide a nip for the web. The corrector rods are guided by pivoting links or rails.

3,779,139

PLASTIC BAG WITH INTEGRAL TIE AND METHOD OF FORMING SAME

Daniel A. White, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 16, 1972, Ser. No. 226,710
Int. Cl. B31b *1/90, 49/04*
U.S. Cl. 93—35 VL 4 Claims



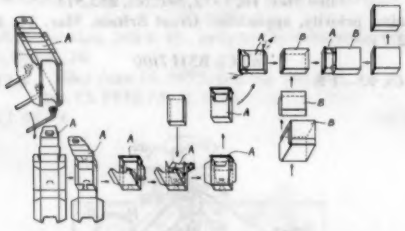
A plastic film web is perforated and sealed at the open end of a bag to provide an integral tear strip portion of the bag material which can later be either wholly or partially detached for use as a closure tie.

3,779,140

METHOD AND APPAPARATUS FOR AUTOMATICALLY SETTING UP OF PAPER CASES WITH THE BENDABLE-HEADED INNER CASE

Yoshinobu Yamamura, Kyoto, Japan, assignor to Kinki Insatsu Kabushiki Kaisha, Mitejima, Nishiyodogawa-ku, Osaka, Japan

Filed Mar. 29, 1972, Ser. No. 239,116
Claims priority, application Japan, Oct. 19, 1971, 46/83161
Int. Cl. B31b *17/74*
U.S. Cl. 93—36.01 3 Claims



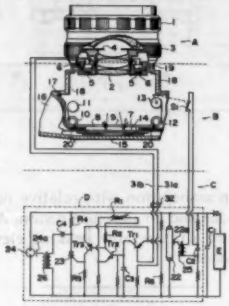
Apparatus for automatically setting up of a paper case including an inner case whose head or lid portion bends to one side when pushed at the bottom for opening and the method of making same comprising an inner case setting up process wherein inner case blanks cut in the desired shape and piled up, are transferred intermittently one by one, are folded up and down along creases automatically, during which a locking portion which prevents, at a certain point, folding over of the end portion of inner case, is led under a guide plate, a tapered end of the inner case is led from the lower side to the upper side of said guide plate and the end of the guide plate is inserted between the back part and said locking portion; an outer case setting up process wherein folded blanks for the outer case in piled conditions are transferred intermittently one by one onto a different line from that for setting up inner cases, after which the outer case is formed, straightened up and drawn out as it is seized at its interlocking flap, which is folded inwardly; and an insertion process wherein the set up inner case is inserted in the set up outer case.

3,779,141

APPARATUS FOR CONTROLLING AN ELECTRONIC FLASH

Hiroshi Ueda, Nara, and Kayoshi Tsujimoto, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Dec. 17, 1971, Ser. No. 209,044
Claims priority, application Japan, Dec. 19, 1970, 45/113589; Feb. 6, 1971, 46/4917; Aug. 4, 1971, 46/58251
Int. Cl. G03b *7/08, 15/05*; G01i *1/04*
U.S. Cl. 95—10 CE 10 Claims



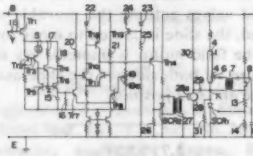
An exchangeable lens barrel for use in a photographic camera is provided with a light sensitive element which, when the exchangeable lens barrel has been exactly fitted to the camera, receives the light which is reflected from the light sensitive film surface after it is transmitted through the objective lens and the iris aperture of the exchangeable lens barrel. A control system for an electronic flash tube in the camera or an electronic flash device fitted to the camera comprises a lighting control circuit and includes a timing circuit which controls the lighting of the electronic flash tube. The timing circuit is connected with the light sensitive element to generate a current which is integrated by the timing circuit, and the electronic flash tube is extinguished when the integrated voltage reaches a certain predetermined level, thereby the opening of the iris aperture in the exchangeable lens barrel is transmitted to the control circuit.

3,779,142

AUTOMATIC ELECTRONIC FLASH DEVICE

Kotaro Yata; Yasuhiro Nanba, and Seiji Yamada, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Jan. 29, 1973, Ser. No. 327,458
Claims priority, application Japan, Feb. 28, 1972, 47/20346
Int. Cl. G03b *15/05*; H05b *41/14*
U.S. Cl. 95—10 CE 5 Claims



An automatic electronic flash device which automatically terminates the flash illumination when a predetermined quan-

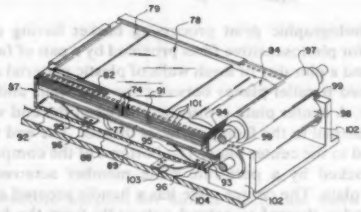
tity of light is received from the subject being photographed. A photocell receives the light from the subject and produces a signal which is subsequently logarithmically integrated. The logarithmically integrated signal is compared with a reference signal representative of any selected one of *f*/stops of the camera lens aperture adjusting scale and a quench tube connected in parallel to the flash tube is fired when the integrated signal reaches the level of the reference signal. To this end, there is also provided a linkage system for connecting the lens aperture adjusting scale to a variable resistor for varying the level of the reference signal.

3,779,143

SELF-PROCESSING FILM UNIT INCORPORATING AN INTEGRAL BATTERY

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,735
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **14 Claims**



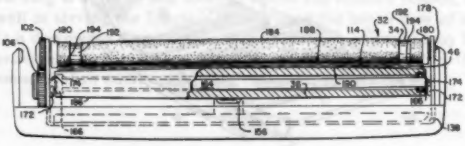
A self-processing film unit incorporates a battery that uses the image developing fluid as an electrolyte after the fluid has been released from its storage container during the film processing operation. Various devices are also disclosed for utilizing the resulting electrical energy to operate instrumentalities of a cooperating camera.

3,779,144

PHOTOGRAPHIC FILM PROCESSING APPARATUS AND CAMERA SYSTEM EMPLOYING SAME

Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,817
Int. Cl. G03d *3/00*
U.S. Cl. 95—14 **22 Claims**



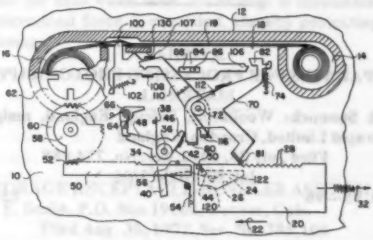
Fluid spreading apparatus for use in cameras of the self-developing type. A spread roller assembly comprises a relatively thin sheet metal mounting bracket having a pair of upturned ears connected together by an elongated support. An elongated rigid support member formed of a light weight material is connected to the bracket support to enhance the rigidity of the assembly. Rotatably mounted between the bracket ears is an elongated spreader roller adapted to be driven by an energy source. A shaft is mounted between the bracket ears for translatory motion towards and away from the aforementioned spreader roller and has a hollow spreader roller rotatably mounted thereon. A specially configured elongated torsion spring is retained by the bracket and rigid support member whereby its respective ends engage the aforementioned shaft intermediate the bracket ears and the hollow spreader roller to yieldably urge the hollow spreader roller towards the other spreader roller. This fluid spreading apparatus is mounted for displacement across an entrance to a film magazine receiving chamber of a camera and a portion of its mounting bracket serves to locate the film magazine in its opertive position.

3,779,145

FILM MOVEMENT PREVENTING MEANS FOR CAMERAS

Helmut Ettischer, Ruit; Kurt Steisslinger, Stuttgart, and Peter Huschle, Boblingen, all of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1972, Ser. No. 277,934
Claims priority, application Germany, Oct. 26, 1971, P 21 53 206.9
Int. Cl. G03b *1/62, 1/14*
U.S. Cl. 95—31 FM **9 Claims**



A camera for roll film perforated at predetermined metering intervals includes a transport mechanism for advancing the film along an exposure plane and a metering mechanism having an inactive condition and an active condition for stopping film transport when the film is correctly positioned for exposure. A film sensing pawl is mounted for movement between a retracted position resting on the film surface, an extended position transversing the film while in a film perforation and a metering position spaced from the extended position in the direction of film advancement. A resilient force on the sensing member urges the sensing member from its metering position toward its extended position. Any tendency of the resilient force acting on the sensing member to move the film during exposure is opposed, at least during operation of the camera's exposure mechanism, by a member clamping the sensing member so that the force is not transmitted by the sensing member to the filmstrip.

3,779,146

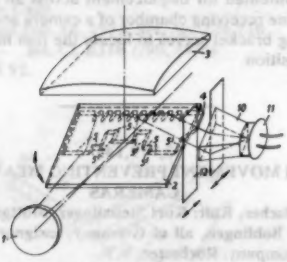
REFLEX PHOTOGRAPHIC CAMERAS

Werner Trankner, Dresden, Germany, assignor to VEB Pentacon Dresden Kamera- und Kinowerke, Dresden, Germany

Continuation-in-part of Ser. No. 100,274, Dec. 21, 1970, abandoned. This application Apr. 4, 1972, Ser. No. 240,553
Claims priority, application Germany, May 27, 1970, WP 57 A/147 755; Aug. 16, 1971, WP G 03b/157 133
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **14 Claims**

A reflex camera having a photoelectric exposure meter includes a light concentrator guide having reflective surfaces mounted on and arranged behind the reflex mirror which is partially transparent (half silvered). The light concentrator guide is provided with a first reflective surface lying transversely of the optical axis of the object lens of the camera and a second reflective surface lying transversely of the optical axis.

The second reflective surface reflects light rays entering the light concentrator guide from the object lens of the camera



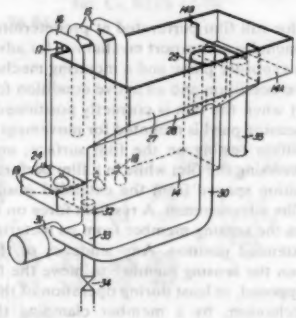
towards a light emergent surface thereof. A photoelectric receiver is situated opposite the light emergent surface of the light concentrator guide to receive the light rays.

3,779,147

APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL

Derrick Sunnucks Woollacott, Sidcup, England, assignor to Colorapid Limited, Croydon, England

Filed July 25, 1972, Ser. No. 274,988
Int. Cl. G03d *3/06*
U.S. Cl. 95—96 **13 Claims**



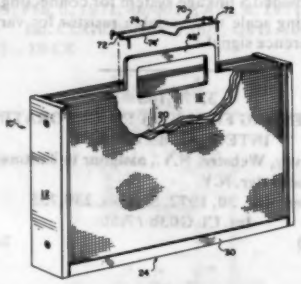
Apparatus for treating photographic prints or film material in which chemicals and water are selectively fed to a light proof container for the material to be treated, which is releasably mounted on a collecting chamber from which it is pumped by a processing pump to the container and flows back to the chamber via a light trap. The temperature of the chemicals and water is accurately controlled. The chemicals are fed selectively from containers therefore positioned in a thermostatically controlled water tank via a separate secondary pump for each vessel and via a separate syphon tube for each secondary pump. When the pumps are switched off a portion of the chemicals can syphon back for re-use. Various types of light proof containers may be used and in one construction the feed pipe from the outlet of the pump is connected to the lower end of the container with the chemical or water overflowing at the top via a surrounding outer container. A level sensing switch in the container may alternately switch on and off the processing pump to provide vertical agitation. Film spirals may be supported on a motor driven rotary rod.

3,779,148

PHOTOGRAPHIC PRINT PROCESSING BASKET

William G. Hill, 1163 Walnut St., Des Plaines, Ill.

Filed Sept. 20, 1972, Ser. No. 290,487
Int. Cl. G03d *3/00*
U.S. Cl. 95—100 **12 Claims**



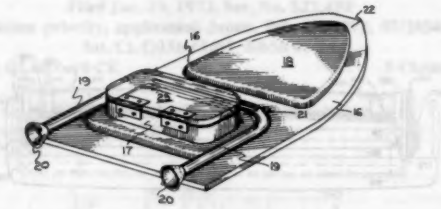
A photographic print processing basket having compartments for photosensitive films provided by a pair of facing end walls and a plurality of mesh walls of plastic material arranged in spaced parallel planes between the end walls and molded therein. A center plate is disposed between the end walls in a plane normal to the facing surfaces thereof. The end walls are screwed to the center plate. The bottoms of the compartments are blocked by a perforate plate member screwed to the center plate. The center plate has a handle secured along the upper edge thereof to extend outwardly from the basket. A print hold down device is provided selectively to block egress of the photosensitive films from the top of the compartments, one form thereof being frictionally secured to the handle and another form thereof comprising wire bails hingedly secured to the upper ends of the end walls and capable of movement between a position blocking the upper ends of the compartment and a position enabling access thereto for insertion and removal of the photosensitive films.

3,779,149

VENTILATOR DEVICE

John E. Bernard, Jr., 1804 Skycoe Dr., Salem, Va.

Filed July 26, 1972, Ser. No. 275,346
Int. Cl. B60h *1/30*
U.S. Cl. 98—2.16 **1 Claim**



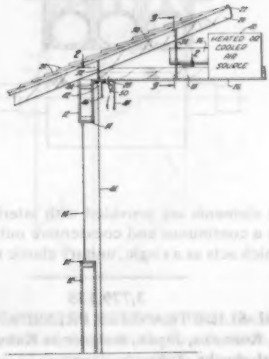
A ventilator device in the form of a half dome having an open, screened face surmounting a sloping header with an internal, hinged entrance located below the header and a slotted U-tube having dual funnel shaped intakes facing in the direction of the screened face, the slotted U-tube enabling air forced therein via the funnel intakes to disperse moisture within the device to be exhausted other than through the air passageway over which the ventilator device is mounted with an opening in a vehicle to be ventilated. The ventilator device may be molded or otherwise formed, and the material of which it is made may be opaque or translucent - in the latter case providing illumination from daylight sources as well as ventilation.

3,779,150

COMBINATION VALANCE AND CONDITIONED AIR ADMISSION DUCT

Fred C. Sproul, Sr., 12227 Ranch House Rd., San Diego, Calif.

Filed June 28, 1971, Ser. No. 157,282
Int. Cl. F24f 13/06
U.S. Cl. 98—40 D 8 Claims



In a structure adapted for human habitation there is provided in the ceiling of a room an elongated aperture parallel to and closely adjacent to a wall, particularly an outside wall provided with a window with which there may be associated a drapery. Depending from the ceiling paralleling and adjacent to the sides of the aperture are shallow and deep boards or panels, the former being located between the drapery and the aperture, and the latter being on the other side of the aperture. Above the ceiling and in communication with the aperture in the ceiling there is a plenum chamber to which is connected a duct for supplying heated, cooled or otherwise controllably conditioned air to the plenum chamber and through the aperture in the ceiling into the room. The depth of the shallower of the panels is preferably such as to overlap by a small amount the top of the drapery and thereby to serve as a baffle to direct the flow of air downwardly along the room side of the drapery rather than to permit the air to enter the space between the drapery and the window. The depth of the deeper board or panel is largely a matter of aesthetics, since it functions to serve as a valance and conceal from view the shallow baffle board and the aperture in the ceiling, except when the point of viewing is more or less directly below the valance boards, as well as serving the function of confining the initial flow of air to a downward direction along the wall. The aperture may be provided with adjustable baffle vanes for controlling the amount of air admitted into the room through the orifice.

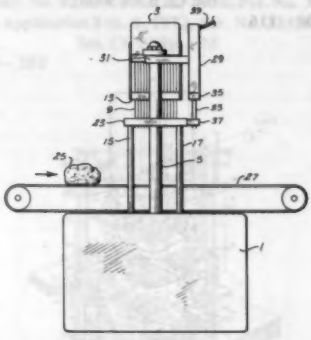
3,779,151

FORCE-LIMITED INJECTION SYSTEM FOR MEAT PROCESSING

Henry M. Ross, Nokesville, Va., assignor to Ross Industries, Inc., Midland, Va.

Filed Mar. 13, 1972, Ser. No. 233,893
Int. Cl. A23b 1/16
U.S. Cl. 99—533 3 Claims

A fluid-operated apparatus for injecting seasoning solutions into meat having a reciprocable head with spaced, independently force-limited needle elements disposed over a conveyor belt for injecting the meat as it is successively positioned by longitudinal and lateral movement of the conveyor belt. The needle elements have individual poppet valves actuated by needle penetration into the meat. The needles are pushed back into the head when bone or cartilage is encountered and a predetermined force is exceeded, thereby protecting them from damage.

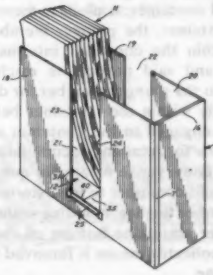


3,779,152

STORAGE RECEPTACLE-BUNDLER ASSEMBLY

Duaine E. Smith, P.O. Box 19006, Denver, Colo.

Filed Aug. 30, 1972, Ser. No. 285,106
Int. Cl. B65b 13/00
U.S. Cl. 100—34 17 Claims



A storage receptacle-bundler assembly for newspapers and the like is made from a flat blank provided with crease lines to be formed at the point of use into the required shape including a box-like receptacle portion with an open top and opposed openings in opposed side sections together with a base portion with support surfaces at opposed positions relative to the side openings lying in a plane above the lower edge forming the side access openings to provide a throughspace for passing a tie line under a collection of newspapers supported on the support surface in the receptacle portion and then up along the top thereof to be tied into a bundle. The flat blank is preferably made of paperboard or a like lightweight, imperforate, disposable material and the receptacle and base portions are made from a single flat blank or separate flat blanks which fit together to form the complete assembly. A line cutting blade and roller support for the tie line is carried by the assembly in a convenient location.

3,779,153

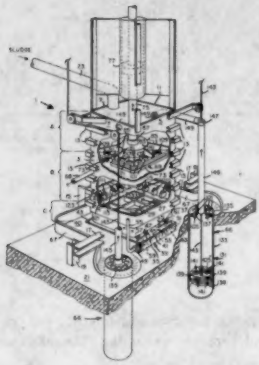
SLUDGE SEPARATOR

Truman Winningham, Monta Vista, Calif., assignor to Truman Smog Control, Inc., San Francisco, Calif.

Filed Apr. 13, 1972, Ser. No. 243,805

Int. Cl. B30b 9/06

U.S. Cl. 100—116 7 Claims



Apparatus for facilitating separation of the liquid and the particulate matter of a sludge mixture. The apparatus including an upright container for receiving a supply of the sludge mixture, said container having inlet means for receiving a supply of said sludge mixture at an elevated sludge receiving zone within the container, a liquid discharge means extending between the interior and exterior of the container engaged to said container about a liquid discharge zone vertically beneath said receiving zone for controlling discharge of liquid from said container and a particulate discharge zone vertically beneath said liquid discharge zone for discharging particulate matter from said container; a plunger member within the interior of the container, the plunger member being movable reciprocably within the container intermediate said sludge receiving zone and said particulate discharge zone; drive means engaged to the plunger member for driving the plunger member vertically within the container between said zones; collector means engaged to the container about the particulate discharge zone for retaining accumulations of the particulate matter; and conveyance means for conveying the collector means from said container to the exterior of the container; said plunger member further including sealant means for sealing said container about the bottom of the liquid discharge zone when said collector means is removed from said particulate discharge zone.

3,779,154

ROLL PRESS FOR REMOVING THE WATER FROM LAUNDERED WASHING OR OTHER TEXTILES

Hans Fritz Arendt, D-712 Bietigheim-Wttbg., Bleichinsel, Germany

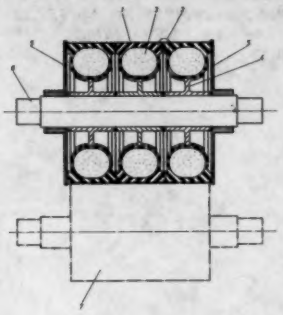
Filed Apr. 16, 1971, Ser. No. 134,771

Claims priority, application Germany, Apr. 16, 1970, P 20 18 161.7

Int. Cl. B30b 3/04

U.S. Cl. 100—155 R 1 Claim

A roller press for removing water from clean wet washing comprising at least one roller which is rigid and at least one roller which is elastic. The elastic roller consists of a plurality of resilient pressurized wheel-like elements having substantially flat peripheral side surfaces juxtapositioned to one another about a common shaft. The flat side surfaces of the



wheel-like elements are provided with interlocking means so as to form a continuous and coextensive outer peripheral roll surface which acts as a single, unitary elastic roller.

3,779,155

PLURAL-SLIDE TRANSFER PRESSING APPARATUS

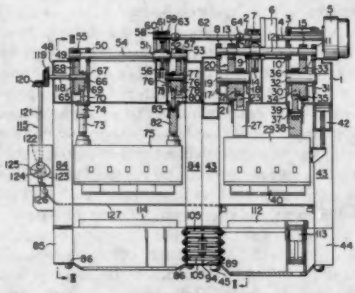
Eiji Ohno, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan

Filed Dec. 29, 1971, Ser. No. 213,409

Claims priority, application Japan, Dec. 31, 1970, 45/123570

Int. Cl. B30b 15/14, 1/06, 15/04

U.S. Cl. 100—207 2 Claims



Plural-slide transfer pressing apparatus wherein a plurality of single action presses are connected right and left at their bed portions, a transmitting shaft provided on a crown of one of the presses and a transmitting shaft provided on a crown of the other press are connected with flexible couplings, both of the presses are driven or stopped by a clutch and a brake provided in one press, and moreover a transfer bar provided across both of the presses is driven by the rotating force taken from either one of main gears provided in a crown of one of the presses.

3,779,156

TRASH COMPACTOR HAVING MEANS FACILITATING TRASH REMOVAL THEREFROM

Marlin L. Race, Elm Grove, Wis., assignor to General Electric Company, Louisville, Ky.

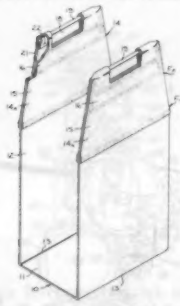
Filed Nov. 16, 1971, Ser. No. 199,266

Int. Cl. B30b 15/32

U.S. Cl. 100—218 6 Claims

Refuse storage apparatus such as a compacting appliance of the type having a driven ram for compacting collected refuse in a bin is provided with an elongated band for use as a sling in manually removing the compacted trash from the bin. The

sling is specifically designed to conform to the inside of the bin and is disposed to underlay the trash in the bin. Flap portions of the sling are adapted to be foldably retracted and positioned so as not to interfere with general operation of the compacting apparatus. The flap portions are further adapted to be manually pulled upwardly from opposite sides of the bin and brought together whereby the sling, with the compacted trash



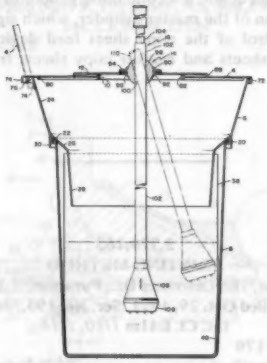
enwrapped therein, may be withdrawn from the bin by the operator exerting a lifting force on the flap portions. The sling facilitates removal of the compacted trash from the bin and enables the operator to conveniently carry the compacted trash from the compacting apparatus for final disposal with less likelihood of accidental staining to the operator's clothes or abrasion from sharp edges of crushed items in the load of trash.

3,779,157

RECEPTACLE FOR WASTE MATERIAL

Thorvald S. Ross, Jr., Manchester, and Leonard P. Entin, Wayland, both of Mass., assignors to said Ross, by said Entin

Filed Apr. 29, 1971, Ser. No. 138,482
Int. Cl. B30b *5/00*; B65b *1/24*
U.S. Cl. 100—240 **32 Claims**



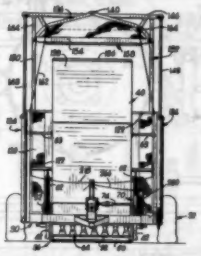
A receptacle for receiving, compacting, storing, segregating, and eventual disposal of the compacted trash. It comprises an outer holder, and inner removable and disposable container, an overlying combined funnel and cover, the funnel opening into the top of the disposable container, and the cover being pivoted to the funnel so as to be swung outwardly therefrom, and being provided with a hole through which a manually actuated compactor or ram may be inserted for crushing the trash.

3,779,158

STACK FORMING LOADER

Raymond A. Adee, Newton; Dean P. Brooks, Hesston, and John Dale Anderson, Canton, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 82,900, Oct. 22, 1970, Pat. No. 3,732,672.
This application Feb. 4, 1972, Ser. No. 223,685
Int. Cl. B60p *1/38*
U.S. Cl. 100—250 **9 Claims**



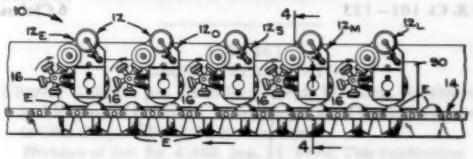
A stacking implement picks the precut crop off the ground, elevates the crop and blows it into a wagon. The crop is periodically compressed in the wagon, a crop-distributing deflector in the wagon is tilted in response to actuation of the compressor, and a stack unloading ramp is also raised and lowered by actuating the compressor.

3,779,159

EGG MARKING APPARATUS

Boyd W. Rose, Riverside, and John H. Bercovitz, Jr., Mira Loma, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed June 30, 1971, Ser. No. 158,367
Int. Cl. B41f *17/30*
U.S. Cl. 101—35 **13 Claims**



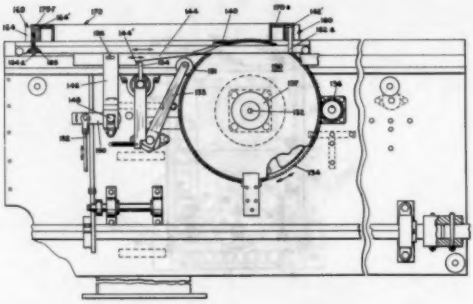
An apparatus for selectively marking individual eggs carried by a bucket-type egg conveyor includes a bank of marking wheels each of which carries a plurality of circumferentially spaced marking heads with printing dies embedded in their outer faces. The outer portion of each marking head is universally pivotable about an inner neck portion so that the printing dies can be urged into flush printing engagement with the eggs carried by the conveyor, even one that is cocked in its bucket and thereby not aligned squarely with the marking head. Each marking wheel is arranged to be continuously rotated and is mounted on a pivotable arm that is operatively connected to a rotary solenoid whereby, when the solenoid is energized, the marking wheel will be moved down to place one of its marking heads into engagement with an egg passing therebeneath. The marking wheels are each associated with a particular grade of eggs and are operated through a memory unit which records the grade of the egg carried by each individual bucket of the egg conveyor.

3,779,160

PRINTING PRESS AND WEB REGISTRY SYSTEM

James A. Black, Kent City, and Harry Russell Farwell, Cedar Springs, both of Mich., assignors to James A. Black, Kent City, Mich.

Filed July 2, 1970, Ser. No. 51,852
Int. Cl. B41f *15/04*
U.S. Cl. 101—115 **7 Claims**



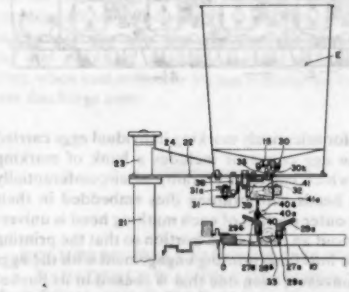
A multiple station continuous web printing press having a plurality of web-receiving operative stations spaced by web-slack receiving zones. Tab applicator means upstream of a first station are provided to apply a series of spaced registry tabs to the web. Tab engaging and advancing means at each station is shiftable to engage the tabs and advance portions of the web from the slack zones into registry at each station for printing thereon.

3,779,161

SCREEN PRINTER WITH INK LEVEL SENSING AND CONTROL

Masaharu Tatebe, Kyoto, Japan, assignor to Kurashiki Boseki Kabushiki Kaisha (a/k/a Kurabo Industries Ltd.), Hommachi, Kurashiki-shi, Okayama-Kin, Japan

Filed Sept. 20, 1971, Ser. No. 181,732
Claims priority, application Japan, Sept. 28, 1970, 45/85249
Int. Cl. B41f *15/40*
U.S. Cl. 101—123 **6 Claims**



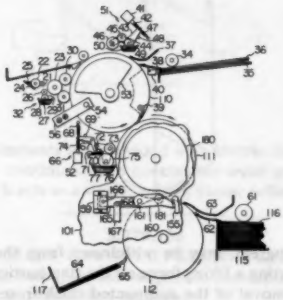
An automated printing ink supply device including an ink storage container, a slider valve through which the flow of printing ink onto an ink receiving area can be controlled and a mechanism including a liquid level detector for operating the slider valve. By this menas, the ink can be automatically supplied to the ink receiving area on the screen during the time an endless belt of the automatic screen printing machine is stopped to compensate for the amount of the printing ink that has been lost or deposited on the material to be printed.

3,779,162

COPY SHEET DISTINGUISHING DEVICE FOR ROTARY OFFSET PRINTING MACHINES

Toshiya Ogawa, Tokyo, and Toru Hasegawa, Kawasaki, both of Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 67,056, Aug. 26, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,704
Claims priority, application Japan, Sept. 8, 1969, 44/71459
Int. Cl. B41f *7/06, 35/06*
U.S. Cl. 101—142 **11 Claims**



A copy sheet distinguishing device for rotary offset printing machines having a copy sheet feed device of the type in which the copy sheet feed operation is automatically controlled. The copy sheet distinguishing device controls the automatic copy sheet feed device such that the latter acts also as a marker copy sheet feed device, inserting copy sheet markers between successive groups of printed copy sheets for one master plate each time a predetermined number of copy sheets have been printed from one of a series of masterplates successively mounted on the master cylinder, so that rapid distinguishing between several groups of printed copy sheets can be facilitated after the completion of duplication of a predetermined number of master plates. A logic control circuit is disclosed including a first pulse generator responsive to the printing of a copy sheet and a second pulse generator responsive to each revolution of the master cylinder, which signals are used to affect control of the copy sheet feed device to provide printed copy sheets and marker copy sheets from the same stack.

3,779,163

PRINTING METHOD

Bart A. Inwood, 186 Lawrence Dr., Paramus, N.J.

Filed Oct. 29, 1971, Ser. No. 193,786
Int. Cl. B41m *1/10, 1/18*
U.S. Cl. 101—170 **9 Claims**

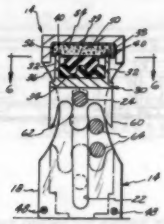
A printing method wherein a series of indicia, a geometric design, an artistic work or the like is scribed on a flexible plastic sheet serving as a printing plate. The plastic sheet is then coated with a water base ink, an oil base ink, or both, one after the other in either order. The excess ink is removed after each coating. The inked plastic sheet is placed on top of an ink receptive paper or the like with the scribed and inked surface of the plastic sheet adjacent the paper. The non-scribed, non-inked side of the plastic sheet is rubbed with a hard, smooth-edged implement. Thereafter, the plastic sheet is removed from the paper and the ink thereon is permitted to dry.

3,779,164

STAMPING DEVICE

Jon A. Study, Grosse Pointe Woods, Mich., assignor to Carco, Inc., Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,784
Int. Cl. B41k *1/54*
U.S. Cl. 101—334 1 Claim



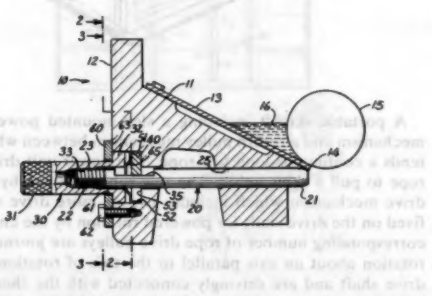
A stamping device for providing ink to a stamp die supported by a frame movable between a first position wherein the stamp die is in contact with an ink pad through an opening in an envelope that otherwise completely encloses the ink pad, and a second position wherein the frame is shifted downwardly to disengage the stamp die from the ink pad. The frame is attached to the stamping device in such a manner that downward movement of the stamp die away from the ink pad results in the movable frame being rotated 180° to move the stamp die into a position for further downward movement toward a stamping operation. Tensioning means are provided for urging a sealing member, carried by the movable frame and circumscribing the stamp die, into engagement with the outer surface of the envelope to provide a seal around the envelope opening, thereby preventing a premature drying of the ink carried by the ink pad.

3,779,165

INK FOUNTAIN IN AN INKING MECHANISM FOR PRINTING MACHINES

Paul Abendroth, and Kurt Reiser, both of Offenbach, Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach/Main, Germany

Filed Nov. 9, 1972, Ser. No. 304,898
Int. Cl. B41f *31/04*
U.S. Cl. 101—365 9 Claims



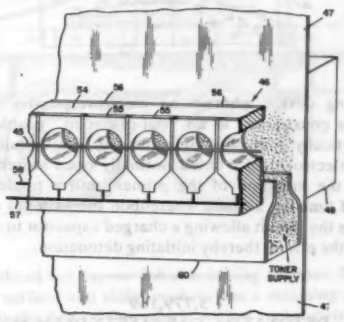
An ink fountain having a fountain roller and cooperating blade, the fountain including a plurality of blade adjusting pins which are mounted in the frame for endwise movement. The presented outer ends of the pins are threaded for engagement by respective adjusting nuts. The adjusting nuts are captively rotatable in the frame and a key is interposed between the frame and each of the pins for holding the pin against rotation as the nut is turned to move the pin inwardly and outwardly. The captivity is provided by an annular flange or shoulder at the inner end of each nut, the flange being received in a groove enclosed by a retainer plate, the retainer plate being removable to permit retraction of the pin, nut and key as a unit for cleaning purposes.

3,779,166

ELECTROSTATIC PRINTING SYSTEM AND METHOD USING IONS AND TONER PARTICLES

Gerald L. Pressman, Cupertino; Hugh Frohbach, Sunnyvale, and David E. Blake, Woodside, all of Calif., assignors to Electroprint, Inc., Palo Alto, Calif.

Filed Dec. 28, 1970, Ser. No. 101,681
Int. Cl. G03g *13/06*
U.S. Cl. 101—426 29 Claims



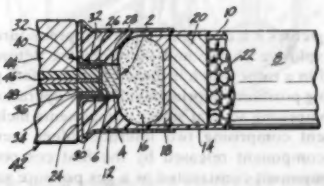
A system for electrostatic printing including a corona source and electrode for generating a substantially uniform ion stream in the direction of a print receiving medium and a multilayered apertured grid modulator interposed in the ion stream for modulating the cross sectional flow density of ions in the stream in accordance with a pattern to be reproduced. A toner supply introduces a cloud of substantially uncharged toner marking particles adjacent the print receiving medium whereby the modulated ion stream selectively impinges upon and charges toner particles in the cloud which are thereby accelerated and deposited on the print receiving medium in accordance with the pattern to be reproduced.

3,779,167

ELECTRICAL INITIATOR

Charles G. Irish, Jr., Cheshire; Joseph W. Silva, Northford, and Raymond I. Cowles, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 4,480, Jan. 21, 1970. This application Sept. 5, 1972, Ser. No. 286,387
Int. Cl. F42b *5/08*
U.S. Cl. 102—46 1 Claim



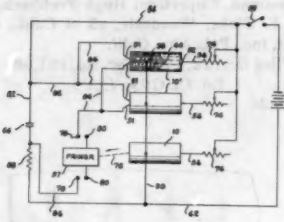
An initiator having a body of nitrocellulose material having a surface characterized by thin fibres or thin webs with a film of a conductive material adhered to said surface.

3,779,168

ELECTROCHEMICAL FIRING DEVICE

Douglas M. Hinely, Derwood, and Robert J. Lyon, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1971, Ser. No. 134,171
Int. Cl. F42b 5/08; F23q 7/02
U.S. Cl. 102—70.2 R 5 Claims



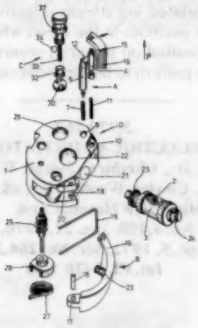
A firing device wherein an electroresponsive explosive primer is constrained in an "out-of-circuit" position by an electrolytically controlled delay device. The circuit includes several electrolytically timed normally open switches which prevent the initiation of the primer until a predetermined length of time has elapsed whereupon the switches close and complete the circuit allowing a charged capacitor to discharge through the primer thereby initiating detonation.

3,779,169

DETONATING CAP SAFETY DEVICES

Gunter Backstein, and Lothar Petzsch, both of Meerbusch-Langst, Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Jan. 27, 1972, Ser. No. 221,280
Claims priority, application Germany, Feb. 13, 1971, P 21 06 964.7
Int. Cl. F42c 15/24
U.S. Cl. 102—78 9 Claims



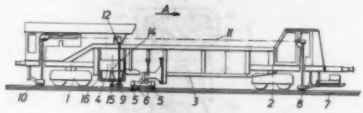
In projectiles it is desirable to prevent premature detonation of the explosive charge and therefore the detonating cap is provided in a rotor which is turned from a safety position to a detonating position by spring means after operation of a safety chain comprising several safety components including a first component comprising two interdependent inertia bolts, a second component released by the first component, and a third component constructed as a gas pressure safety device, the second and third components being operatively connected with the rotor such that premature release of one of the components blocks rotation of the rotor into the detonating position. A self-contained disc-shaped construction housing all the safety components is provided for attachment to a projectile.

3,779,170

CONTROL FOR THE LATERAL ADJUSTMENT OF A TRACK WORKING TOOL ASSEMBLY

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria

Filed Dec. 30, 1971, Ser. No. 214,070
Claims priority, application Austria, Feb. 19, 1971, 1458
Int. Cl. E01b 27/16
U.S. Cl. 104—12 10 Claims



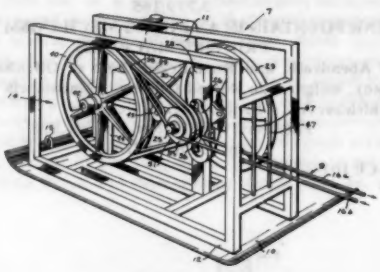
The lateral adjustment of a track tamping unit is controlled by a sensor associated with the unit and arranged to sense the lateral position of the track in respect of the unit as the tamper moves on the track rails. The sensor produces electrical control signals corresponding to the sensed track deviations, and an adjustable control device for the track tamping unit drive is electrically connected to the sensor and receives the control signals. The signals adjust the control device for moving the track tamping unit laterally in response to the control signals.

3,779,171

PORTABLE SKI LIFT DRIVE MECHANISM

John J. Littlehorn, Jr., 4530 S. Broadway, Englewood, Colo.

Filed Jan. 24, 1972, Ser. No. 220,263
Int. Cl. B61b 7/06
U.S. Cl. 104—173 8 Claims



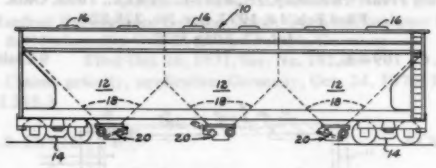
A portable ski lift including a sled-mounted power drive mechanism and a return pulley mechanism between which extends a continuous-loop tow rope. The power unit drives the rope to pull a skier uphill. The tow rope is driven by a rope drive mechanism which includes two or more drive sheaves fixed on the drive shaft for powered rotation by the engine. A corresponding number of rope drive pulleys are journaled for rotation about an axis parallel to the axis of rotation of the drive shaft and are drivingly connected with the sheaves by drive belts. A rope idler wheel is positioned intermediate the pulleys and sheaves. The tow rope enters the drive mechanism and passes sequentially over the pulleys and idler wheel, then exits from the drive mechanism through a positive rope feed wheel arrangement. The tow rope is gripped between each rope drive pulley and the associated drive belt extending between the pulley and the sheaves. Additional guide rollers may be provided to direct the tow rope in and out of the drive mechanism.

3,779,172

RAILWAY HOPPER CAR OUTLET

Dennis J. Schipper; Harold T. Ried, and Dallas W. Rollins, all of St. Charles, Mo., assignors to ACF Industries Incorporated, New York, N.Y.

Filed Mar. 24, 1971, Ser. No. 127,452
Int. Cl. B61d 7/20, 7/22, 7/32
U.S. Cl. 105—282 P 15 Claims



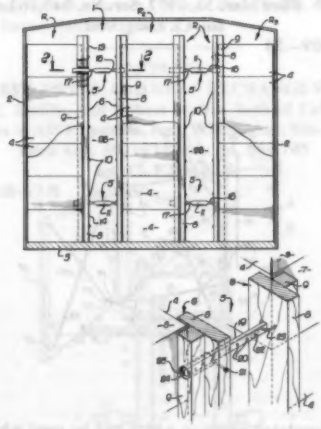
A railway car hopper outlet for either gravity or pneumatic unloading includes an inclined wedge shaped gate, which is mounted on upper and lower rollers for limiting tilting of the gate during opening. A pneumatic discharge tube extends along the lower edge of the gate in a direction perpendicular to the direction of the movement of the gate so that the gate in its closed position guides the lading toward the pneumatic tube. The pneumatic tube has a rotatable valve adapted to open at and above the lower edge of the gravity gate for receiving lading. For gravity operation, the rotatable valve is left closed and the gate only is moved longitudinally. For pneumatic operation, the gate is left closed and only the valve is opened.

3,779,173

BOXED PRODUCE CARLOADING

Harold C. Pierce, 234 Mountain View Ave., Pomona, Calif.

Division of Ser. No. 44,942, June 10, 1970, Pat. No. 3,701,324.
This application June 23, 1972, Ser. No. 265,680
Int. Cl. B61d 45/00; B60p 7/10
U.S. Cl. 105—369 S 4 Claims



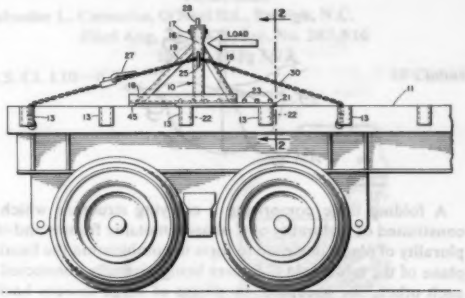
Boxed produce load for refrigerated rail cars of the type having boxes arranged in vertical stacks and the stacks aligned in plural rows running longitudinally of the car and in which the rows have a cumulative width less than the load width of the car, means being provided to expand the load to the car load width and to support the rows against lateral displacement including a longitudinal series of opposed pairs of uprights engaging the rows and rigid elements extending between and supporting the upright pairs; the rigid elements being length adjustable to selectively transversely space the rows to occupy the full load width of the car and brace the load.

3,779,174

BULKHEAD

William F. Doyle, 2818 McAlister St., Topeka, Kans., and Charles W. Artzer, 631 Freeman St., Topeka, Kans.

Filed Aug. 25, 1972, Ser. No. 283,765
Int. Cl. B60p 7/14
U.S. Cl. 105—376 11 Claims



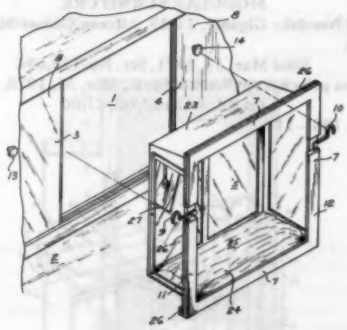
A bulkhead for use on vehicles having an open flat cargo carrying surface and stake pockets has a retaining panel attached to the bed of the vehicle with a rack carried by the panel and a comb structure which is secured in the stake pockets. The rack and comb are secured together with a plurality of longitudinally spaced pegs and holes which permit longitudinal positioning of the bulkhead against the cargo. A bracket having a slot of two different cross-sections is provided on the bulkhead to cooperate with a chain to secure the bulkhead to the vehicle against relative vertical movements.

3,779,175

PORTABLE LOCOMOTIVE CAB STORM WINDOW

Raymond Allen Wallen, Sr., Spokane, Wash., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,737
Int. Cl. B61c 17/04; B61d 25/00; B61k 13/00
U.S. Cl. 105—456 7 Claims



A portable storm window for a window of a locomotive cab comprises a glass panelled box with an adjustable rear view mirror having an open side and dimensioned to fit into the maximum open area of the cab window when the cab window is open. The box extends outward beyond the outside of the locomotive at the cab window. A protruding strip around the

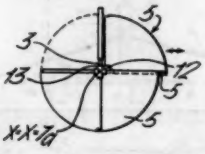
open side of the box is adapted to abut the inside of the locomotive at the cab window. Releasable fastening means on the strip releasably affixes the storm window to the inside of the locomotive at the cab window.

3,779,176

FOLDING TABLE

Giancarlo Piretti, Bologna, Italy, assignor to Anonima Castelli s.p.s. di Casare Castelli, Bologna, Italy

Filed Sept. 17, 1971, Ser. No. 181,550
Int. Cl. A47b *3/00*
U.S. Cl. 108—112 **3 Claims**



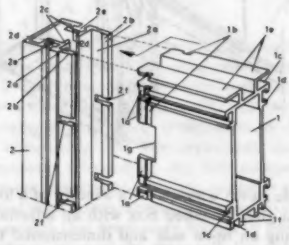
A folding table comprising a carrying structure which is constituted of a plurality of C-shaped metallic frames and of a plurality of plates designed to form in combination the bearing plane of the table, said C-frames being pivotally connected to each other, one excepted, by means of hinge devices having vertical pivot axes and arranged at the sides of each vertical members of the C-frames, said vertical members being so shaped as to form in the use position of the table a single central composite post for the table, while the upper arms of the C-frames in said use position are radially positioned and spaced apart from each other of a same angle and forming the carrying means for said plates, which are designed to be each located between two adjacent C-frames, when in use position, while the lower arms of said C-frames form the radial legs of the table, said C-frames being provided with first and second stop means, wherein the first stop means define the mutual position of the C-frames, where the parts constituting the table occupy the minimum space, while the second stop means define the position of the C-frames in the use position of the table, each of the said plates being so shaped as to be inserted between two adjacent C-frames, when these latter are in their operative position, said plates being associated with means adapted to connect said plates to the upper arms of the C-frames and/or to each other in a disconnectable manner.

3,779,177

MODULAR FURNITURE

Ernesto Nesofsky Gigante, 21-23, Alfonso Gomez St., Madrid, Spain

Filed Mar. 31, 1971, Ser. No. 129,694
Claims priority, application Spain, Mar. 31, 1970, 378111
Int. Cl. A47b *43/00, 47/00*
U.S. Cl. 108—114 **5 Claims**



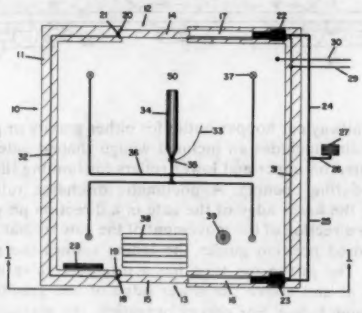
Modular furniture such as wardrobes, clothes lockers, shelving, sliding door cabinets, filing cabinets and the like, is assembled from extruded sections that snap together at their ends and that also have special interconnecting members. Particular provision is made for the reception of sliding door panels and for the hanging of shelves from the modules, the sliding doors being lockable.

3,779,178

RESTRAINED ACCESS PROTECTION APPARATUS

Gerald Frederick Riseley, Jr., 8149 E. 31st Ct., Tulsa, Okla.

Filed Feb. 14, 1972, Ser. No. 225,822
Int. Cl. E05g *3/00*
U.S. Cl. 109—6 **9 Claims**



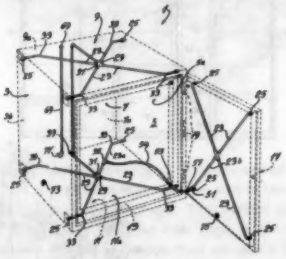
An apparatus wherein an intruder may be restrained within a protected area and held captive therein until the proper authorities are summoned in order to deactivate the apparatus, and apprehend the thief, thereby preventing loss of property as well as loss or endangerment of human life.

3,779,179

FIRE-INSULATED PARTITION AND FIREPROOF CONTAINER MADE THEREWITH

Jules Marois, 2060 Boulevard Talbot, Notre Dame des Laurentides, Quebec, Canada

Filed Mar. 31, 1972, Ser. No. 240,162
Int. Cl. E05g *3/00*
U.S. Cl. 109—33 **6 Claims**



A fire insulated partition which can be used whenever it is necessary to store valuable papers or other articles of value inside a fireproof enclosure. The partition comprises an interior wall and an enterior wall both of which are spaced from one another to define an inner space therebetween. A wet-pipe system of sprinklers is disposed in the above inner space. This system includes water pipes connected to the sprinklers and valves for the sprinklers. There is provided a water inlet for filling the water pipes and for keeping water under pressure in the water pipes. The exterior wall is provided with fusible metal portions which are associated with the valves and are

operable when the exterior wall is heated to cause opening of the valves and to produce a discharge of water inside the inner space, by the sprinklers, thus filling it with water. Water is continuously drained from the top of the inner space, thus producing a continuous circulation of a volume of water inside the inner space after the valves have been opened.

3,779,180

COMBUSTION CHAMBER

Manfred Hardemann, Gummersbach, Germany, assignor to L & C Steinmuller GmbH, Gummersbach, Germany

Filed Oct. 26, 1971, Ser. No. 192,009
Claims priority, application Germany, Oct. 24, 1970, P 20 52 315.3
Int. Cl. F23g 7/04
U.S. Cl. 110—7 R **3 Claims**

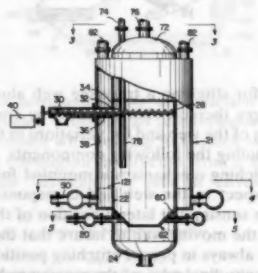
An arrangement for burning substances contained in liquid media and also for burning fine granular substances, in which a plurality of pipes line the inside of a combustion chamber and have a section bent into the interior of the combustion chamber so as to define chamber means in which burner nozzles are located for injecting the substances to be burned in the combustion chamber, while air nozzles in the ceiling of the combustion chamber blow air near the walls of the combustion chamber in counter current flow to the direction in which the burner nozzles flow.

3,779,181

FLUID BED DRYER AND HEAT EXCHANGE SYSTEM

Herbert K. Staffin, and Robert Staffin, both of Colonia, N.J., assignors to AWT Systems, Inc., Wilmington, Del.

Filed Aug. 30, 1972, Ser. No. 284,705
Int. Cl. F23b 1/38
U.S. Cl. 110—7 R **15 Claims**



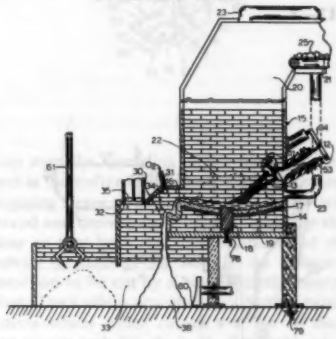
A fluid bed dryer comprising a drying chamber and a heating jacket contiguous with a drying chamber. The drying chamber and the heating jacket are each adapted to contain a bed of fluidizable particulate heat transfer material and each has a fluidizing gas inlet and an exhaust gas outlet. The drying chamber also has a feed inlet and a feed outlet. The fluid bed dryer may be used in a heat exchange system in combination with means for conveying a slurry comprising liquid and combustible waste solids to the feed inlet of the drying chamber of the fluid bed dryer; a reactor having a feed inlet, a reaction section, and a vapor exhaust port; conveyor means for transferring solids from the feed outlet of the drying chamber to the feed inlet of the reactor; conduit means connecting the vapor exhaust port of the reactor to the fluidizing gas inlet of the heating jacket of the dryer; and means for providing fluidizing gas to the fluidizing gas inlet of the drying chamber.

3,779,182

REFUSE CONVERTING METHOD AND APPARATUS UTILIZING LONG ARC COLUMN FORMING PLASMA TORCHES

Salvador L. Camacho, O'Neal Rd., Raleigh, N.C.

Filed Aug. 24, 1972, Ser. No. 283,516
Int. Cl. F23g 5/12
U.S. Cl. 110—8 R **10 Claims**



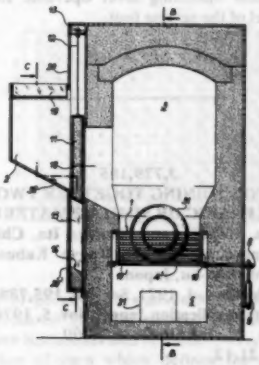
A method and apparatus are disclosed which are based on utilizing a plural number of long arc column forming plasma torches in combination with a refractory lined furnace chamber to continuously pyrolyze household and industrial refuse material fed into the chamber and convert the same to usable materials and useful forms of energy.

3,779,183

TIRE INCINERATOR

Jacques Brion, Velizy-Villacoublay, France, assignor to Commissariat a L'Energie Atomique

Filed May 12, 1972, Ser. No. 252,549
Claims priority, application France, May 13, 1971, 7117311
Int. Cl. F23g 7/00
U.S. Cl. 110—18 R **10 Claims**



The incinerator is designed to burn whole tires representing 100 percent of the charge. A hearth which is smaller in width

than the diameter of the tires to be burned has longitudinal vertical walls provided with lateral orifices for the admission of combustion air. A charging lock-chamber having internal dimensions slightly larger than the dimensions of a vertical tire has a sloping floor along which the tire rolls into the hearth and remains vertical. The combustion chamber of the incinerator is fitted with nozzles for the injection of air in order to induce high turbulence.

3,779,184

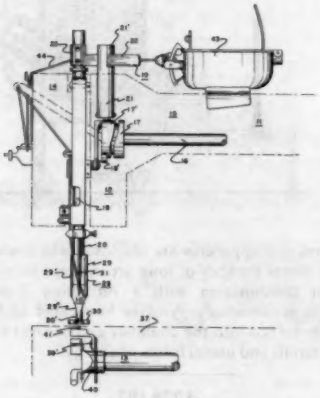
FEED DOG AWL ASSEMBLY

Ferdinand H. Jean Blanc, 2719 N. 36th, Boise, Idaho

Filed July 20, 1972, Ser. No. 273,569

Int. Cl. D05b *27/02*

U.S. Cl. 112—2 **2 Claims**



A feed dog awl assembly for making pilot holes for a sewing machine needle includes a foot subassembly having means operable to drive the sewing foot in a vertically oscillating motion and an awl subassembly disposed above the bobbin of the sewing machine. The foot subassembly may include a selectively controllable operating lever operable to control the lowermost travel of the sewing foot.

3,779,185

APPARATUS FOR JOINING TOGETHER TWO PIECES OF WORK FABRIC OR SIMILAR MATERIALS

Shiro Sakakura, Nagoya, and Naotake Ito, Chiryu, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Horita-dori, Mizuho-ku, Japan

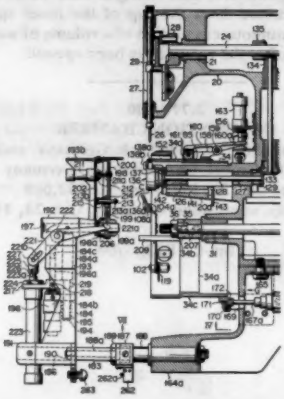
Filed Nov. 4, 1971, Ser. No. 195,789

Claims priority, application Japan, Nov. 5, 1970, 45/97644

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.12 **25 Claims**

An apparatus for joining together two pieces of work fabric or similar materials which comprises a first support for setting a first piece of work fabric and a second support for setting a second piece of work fabric and causes the edges of the first and second pieces to be superposed one on the other by the movement of at least one of said supports so as to have said superposed edges later joined together by suitable joining means such as stitch forming means.



3,779,186

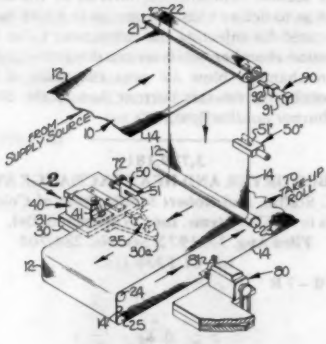
SELF-ALIGNING EDGE STITCHING APPARATUS FOR TRAVELING WEBS

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Aug. 26, 1969, Ser. No. 853,224

Int. Cl. D05b *19/00*

U.S. Cl. 112—121.14 **9 Claims**



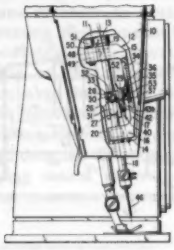
Apparatus for stitching a traveling web along the longitudinal side edges thereof, characterized by compensating for lateral shifting of the web and for variations in the width of the web, and including the following components. A first longitudinal edge stitching mechanism is mounted for lateral movement with respect to the web and is responsive to an edge sensing means sensing the lateral position of the first longitudinal edge of the moving web to insure that the first stitching mechanism is always in proper stitching position with respect to the first longitudinal edge of the moving web. A stationary, second longitudinal edge stitching mechanism is provided along with related laterally shiftable web guide means controlled by an edge sensing means sensing the lateral position of the second longitudinal side edge of the moving web to insure that the second longitudinal side edge is always in proper stitching position with respect to the second stitching mechanism.

3,779,187

SEWING MACHINE WITH HOOK TIMING AND SKIP STITCH MECHANISMS

Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, New York, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,647
Int. Cl. D05b 3/02
U.S. Cl. 112—158 R 11 Claims



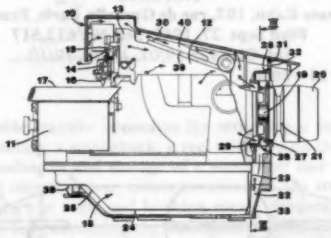
A sewing machine, particularly of the zigzag stitch type in which the needle bar gate is pivotably mounted in the frame of the machine and carries a needle bar and needle mounted thereon for endwise reciprocation and vibratory movement transverse to the line of stitches being produced. The penetration of the needle is co-ordinated with the vibratory movement of the needle bar gate by the provision of an eccentric member co-operable with the gate and with a latch member carried by the needle bar, pivotal movement of the gate effectuating rotation of the eccentric member and linear displacement of the latch member. Means are also provided which co-operate with the latch member for effecting skip stitching.

3,779,188

AIR-COOLED SEWING MACHINE

Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed May 18, 1972, Ser. No. 254,376
Int. Cl. D05b 71/00
U.S. Cl. 112—218 R 6 Claims



An improved sewing machine construction in which the machine is encircled within a pair of envelopes and the lubricant sump is formed with cooling fins which define passages through which cooling air is directed from a suitable source that delivers air between the pair of envelopes and the machine body.

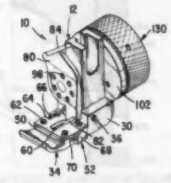
3,779,189

THREAD TRIMMING DEVICE FOR SEWING MACHINES

Douglas J. Fox, Halton, England, assignor to The Singer Company, New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,501
Int. Cl. D05b 65/00
U.S. Cl. 112—252 13 Claims

A manually operated thread cutting attachment for a sewing machine which may be used in place of the conventional sewing machine presser foot. A manually operable drive wheel is fastened on a short shaft journaled in an enlarged presser foot shank and extending in the direction of feed. Secured to the front of the shaft is a disk-like member carrying on its periphery a thread engaging finger, which when the shaft is initially manually turned, swings across the top of the presser foot sole plate and engages the needle thread, drawing it slightly to one side of the needle hole in the presser foot sole plate. The thread engaging finger remains in this position by means of a latch member mounted with the knurled drive wheel while the operator turns the hand wheel of the machine. As the needle descends to form the next stitch, it lays a needle



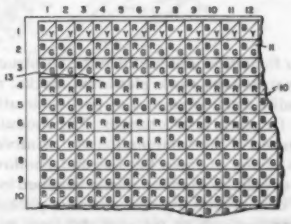
thread loop over the threading engaging finger. The knurled drive wheel is thereafter further manually rotated causing the thread engaging finger to pull upwardly and outwardly on the needle thread and thereby draw bobbin thread up through the throat plate so that both the needle thread and the bobbin thread extend up through the hole in the presser foot sole plate in position to be cut by a knife slidably mounted in the presser foot. The knife is actuated by a further turning of the knurled drive wheel which causes a strike on the disk-like member to engage and slide the knife. When thread severing is completed a spring effects return of the thread engaging finger to its initial position.

3,779,190

METHOD OF WORKING TARTAN OR GINGHAM ON CANVAS

Sara Hower, 101 Manorview Rd., Scott Township, Pa.

Filed June 14, 1972, Ser. No. 262,483
Int. Cl. D05b 95/00, 97/00
U.S. Cl. 112—262 10 Claims



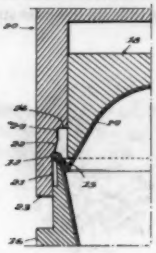
A method of preparing a canvas for needlework, and of making a tartan or gingham pattern on canvas, comprises tramming both horizontal and vertical rows of canvas to form an intersection of yarn which defines the combination of colors and the boundaries of the pattern. The yarn is secured to the canvas with yarn of the same colors used in the trame to complete the pattern.

3,779,191

METHOD AND APPARATUS FOR SECURING A CLOSURE MEMBER WITHIN A CONTAINER

Thomas E. Marion, Baltimore, and Richard D. Collins, Timonium, both of Md., assignors to Maryland Cup Corporation, Owings Mills, Md.

Filed July 6, 1972, Ser. No. 269,304
Int. Cl. B21d 51/34
U.S. Cl. 113—120 K 16 Claims



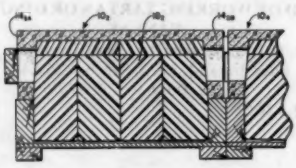
A method for securing a closure member in an open end of a container having a curled or rolled rim is described. Die elements are provided including a container holder, an external pressure pad, and a forming head. A container is supported in said holder and a closure member is inserted into said container just below the curled or rolled rim thereof where it is held in place by said pressure pad. The forming head is then actuated to force or roll the rimmed edge inwardly and crimp the same against the closure member to lock the closure member within said container.

3,779,192

MODULAR CONCRETE FLOATATION UNIT

Paul S. Gonzalez, 12258 Buckingham Ave., Baton Rouge, La.

Filed Aug. 9, 1971, Ser. No. 169,968
Int. Cl. B63b 35/00
U.S. Cl. 114—0.5 F 15 Claims



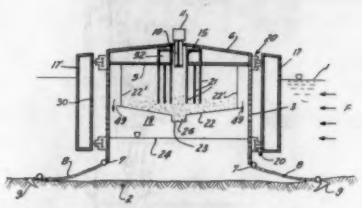
A modular floatation unit useful in the construction of floating piers, boat houses, work platforms, docks, marinas, and the like, readily articulated and of particular utility in water bodies with frequent level changes. The modular floatation unit is comprised of the combination of a reinforced concrete channel slab having an upper flat side and a hollow or concave side, blocks of cellular foam or plastic wrapped in a protective covering or coated with a protective film packed within the hollow or concave side of the said slab, and an open wood frame secured to the underside of the concrete slab to hold the wrapped or coated blocks of cellular foam or plastic in place. The center of gravity of the modular floatation unit is located at a point wherein, in water, the upper flat side of the concrete slab will float above the surface, and provide a deck or walkway as well as protection for the wrapped blocks of cellular foam or plastic. The wood frame will be submerged where it will protect the blocks of cellular foam or plastic against impacts, and it is itself protected against deterioration.

3,779,193

FLOATING OIL STORAGE INSTALLATION

Hiroshi Hirata, 15-30, 2-chome Sanno, Ota-ku, Tokyo, Japan

Filed Jan. 6, 1972, Ser. No. 217,705
Claims priority, application Japan, Jan. 8, 1971, 46/150
Int. Cl. B63b 35/00
U.S. Cl. 114—0.5 T 15 Claims



Floating oil storage tank has a roof and an open bottom. Upper part of tank beneath the roof may serve as a pontoon for floating the tank when no oil is stored in it. The pontoon may house offices, equipment room, operations room, and lodgings. The tank may be secured to fixed anchors on the sea bottom or to a rotatable anchor about which the tank rotates depending upon the direction of the wind, waves, and tide. Oil may be supplied to the tank from a submarine pipe line through the rotatable anchor. Wave protectors may be carried externally of the tank, and may be either fixed or rotatable with respect to the tank. The top wall of the upstream wave protector, with respect to the direction of wave movement, may be sloped to reduce up and down movement of the tank. The tank may have internal sludge collecting and depositing means. A plurality of tanks may be bonded together and a tanker temporarily bonded to the tanks during discharge of oil into the tanker.

3,779,194

MARINE MISSILES FOR DESTRUCTION OF SUBMARINE TARGETS

Louis Lazare Kahn, 102, rue de Grenelle, Paris, France

Filed Sept. 27, 1956, Ser. No. 612,517
Int. Cl. F42b 19/01, 19/06, 19/10
U.S. Cl. 114—20 R 10 Claims

1. A self-propelled marine missile with an impact detonator for the destruction of a movable submarine target by dive launching in straight line toward said target, comprising, in combination, an adjustable elevator carried by the missile for dive steering said missile, means housed within the missile and connected to said elevator for adjusting the latter with respect to the missile, adjustable means accessible externally and connected to said adjusting means for controlling the latter and adjustable at the launching time for determining a constant dive angle of the missile equal to the angle of negative elevation in depth of the submarine target as detected at said launching time whereby the adjusted elevator maintains the path of the dive launched missile substantially coincident with

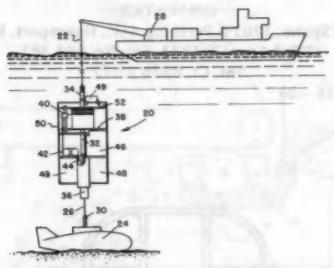
the detected line of negative elevation of said submarine target; an assembly housed within the missile comprising an explosive charge, the impact detonator of said charge a distance responsive detonator in contacting engagement with said charge, and means for detonating the latter means impact of said missile against the submarine target; means housed within the missile for maintaining said detonating means in an inoperative position at the launching time, an adjustable means housed within the missile and responsive to the distance travelled by the missile along the path thereof for releasing said maintaining means in order to obtain an immediate operation of said detonating means, means housed within the missile for adjusting said releasing means at the launching time to operate the release of the maintaining means upon travelling a distance equal to that of the movable submarine target as detected at the launching time, and means connected to said last adjusting means, for remotely controlling the latter in accordance with said detected distance and disconnectable from said last adjusting means when the missile is dive launched.

3,779,195

LIFT CABLE TRANSFER APPARATUS

Ernest N. Oeland, Jr., West Covina, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 12, 1970, Ser. No. 2,303
Int. Cl. B63c 7/04
U.S. Cl. 114—51 **5 Claims**



A lift cable transfer apparatus for retrieving a submerged object including: a strongback; a reel mounted on the strongback for reeling in and storage of a messenger line from the submerged object; power means mounted on the strongback for powering the reel; and latching means mounted on the strongback for connecting the strongback to the submerged object.

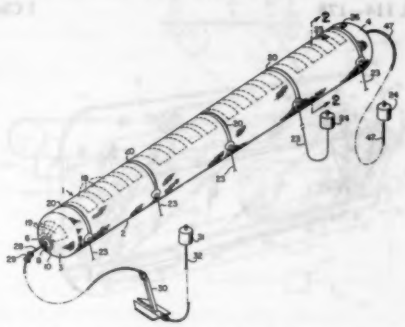
3,779,196

TOWABLE FLOATING STORAGE CONTAINER

Ernest Knaus, Akron, and Francis M. Milhoan, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 24, 1972, Ser. No. 274,369
Int. Cl. B63b 35/00
U.S. Cl. 114—74 T **10 Claims**

A floating, towable container for liquid comprising an elongated flexible walled body portion shaped like a truncated cone tapering from a smaller diameter at the front end to a larger diameter at the rear end and having hemispherical end portions integral with the body. Rigid end closure fittings having towline attachments are mounted in centrally located holes in each end portion. The rear fitting has a filler and



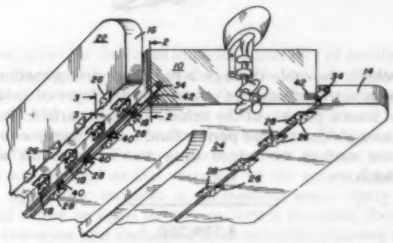
discharge opening. Buoyant material is located inside the body portion along the top of the container. Mooring line attachments are spaced along each side of the container.

3,779,197

DECK HINGE AND LOCKING APPARATUS FOR BOATS EQUIPPED WITH SIDE DECKS

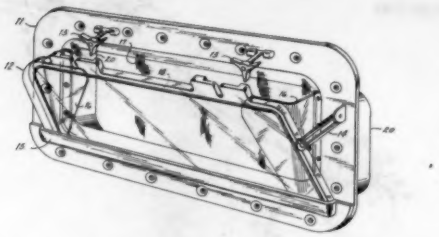
Robert D. Hawkins, 15 Berry Hill Rd., Oyster Bay, N.Y.

Continuation-in-part of Ser. No. 523, Jan. 5, 1970, Pat. No. 3,662,412. This application June 30, 1971, Ser. No. 158,340
Int. Cl. B63b 7/02
U.S. Cl. 114—85 **6 Claims**



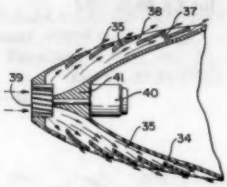
Apparatus is disclosed for hingedly supporting side decks to a hull, and for locking said side decks in place when they horizontally extend from the hull. For each of two decks, a hinge obtains between a side of the hull and the edge of the deck in question which is lowermost when the deck is vertically oriented. A second hinge (actually a plurality thereof), half of which is secured to the hull underside, and the other half of which is secured to the deck underside when the deck is horizontal, provides the deck locking feature, a pin being slideably engageable and disengageable from said hinge halves.

3,779,198
PORTHOLES
Arnold Leo Gray, P.O. Box 8236, 7007 N. Rome, Tampa, Fla.
Filed June 9, 1972, Ser. No. 261,306
Int. Cl. B63b *19/00*
U.S. Cl. 114—178 1 Claim



A porthole consisting of a frame, portlight, and flexible wings attached to the porthole frame that provide an opening that will allow the free movement of air through said opening while not allowing water in the form of rain or spray from entering this same opening.

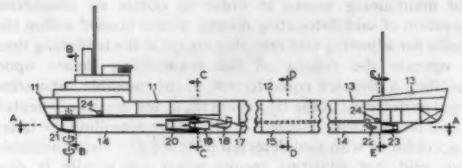
3,779,199
BOUNDARY LAYER CONTROL MEANS
Robert A. Mayer, Jr., 17133 Kings James Way, Gaithersburg, Md.
Division of Ser. No. 861,042, Sept. 25, 1969, Pat. No. 3,604,661. This application Aug. 13, 1971, Ser. No. 171,596
Int. Cl. B63h *11/02*
U.S. Cl. 115—14 1 Claim



A vehicle movable through a fluid supporting medium includes an active system for controlling the layer of said fluid over at least a portion of the vehicle exterior surface. Parallel slots through the surface permit fluid under pressure to issue over the surface to reduce drag and improve lift and/or propulsion.

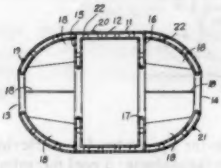
3,779,200
MARINE JET PROPULSION SYSTEM
Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 701,262, Dec. 6, 1957, abandoned, Continuation-in-part of Ser. No. 277,071, April 29, 1963, abandoned, Continuation-in-part of Ser. No. 353,700, March 23, 1964, abandoned, Continuation-in-part of Ser. No. 492,959, Aug. 27, 1965, abandoned, Continuation-in-part of Ser. No. 554,614, April 27, 1966, abandoned, Continuation-in-part of Ser. No. 666,234, Aug. 9, 1967, abandoned, Continuation-in-part of Ser. No. 732,476, April 25, 1968, abandoned, Continuation-in-part of Ser. No. 814,475, Feb. 17, 1969, Pat. No. 3,620,183. This application Sept. 22, 1971, Ser. No. 182,760
Int. Cl. B63h *11/12*
U.S. Cl. 115—16 18 Claims

This invention relates to the ahead-and-astern propulsion of marine vessels by means of a reversible hydraulic-jet ejector structure composed in part of oppositely-directed ejector stagings disposed centrally within a longitudinal open-channel conduit formed into the vessel's hull. The open-channel conduit is formed by opposite chines or keels which depend downwardly from the bottom hull structure of the vessel to define boundaries of the longitudinal ejector passage. A pivoted secondary-nozzle member is disposed centrally within the after section of the longitudinal ejector passage to steer



the vessel in ahead propulsion. The invention includes motive-fluid piping systems for supplying pressurized motive fluids to motive nozzles of the reversible ejector structure from liquid pumps, pressurized steam and water from displacement pressure vessels of pulse-jet systems, and pressurized steam from saline conversion power plants for condensing steam jets within the longitudinal ejector passage of the reversible ejector structure. The invention also includes independent liquid pulse-jet and steam-jet propulsion systems.

3,779,201
INFLATABLE AMUSEMENT DEVICE FOR TREADING ON WATER
Leland R. Spahn, 1701½ Pershing Ave., Davenport, Iowa
Filed Apr. 17, 1972, Ser. No. 244,383
Int. Cl. B63b *35/72*
U.S. Cl. 115—20 3 Claims

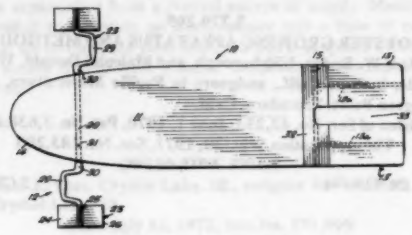


A hollow dirigible-balloon shaped device has spaced, inflated, double walls of pliable plastic and is provided with end openings as passageways for water sportsmen who enter the device and tread on waer. A pair of spaced, plastic dividers within the interior of the device provide reinforcement, and their inner rims function as hand rails.

3,779,202
MANUALLY PROPELLED WATER CRAFT
Gerlad Martin, Miami Beach; James A. Baccus, North Miami, and Marvin Gurman, North Miami Beach, all of Fla., assignors to Holiday Recreation Products, Inc., North Miami, Fla.
Filed Aug. 10, 1971, Ser. No. 170,481
Int. Cl. B63h *16/00*
U.S. Cl. 115—22.3 2 Claims

A surfboard-like, buoyant support member is provided at one end with a manually operable crank mechanism compris-

ing a transverse axle rod having, at each end, a crank handle and a paddle wheel for hand actuation by an operator lying prone upon the support member, and further including vertically swingable flap members extending rearwardly of the rear end of the support member for actuation by the legs of the operator in propelling and steering the craft.

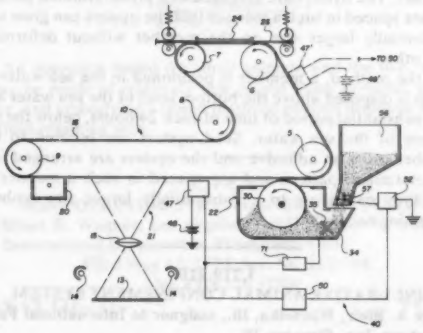


3,779,203

TONER CONCENTRATION CONTROL APPARATUS

Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,396
Int. Cl. G03g *13/16*
U.S. Cl. 118—8 **8 Claims**



A toner concentration control apparatus includes a circuit responsive to the cummulative total charge of electrostatic images and/or toner images which pass a predetermined position of a path for producing a signal which is an accurate measure of the quantity of toner which will and/or has been applied to such images.

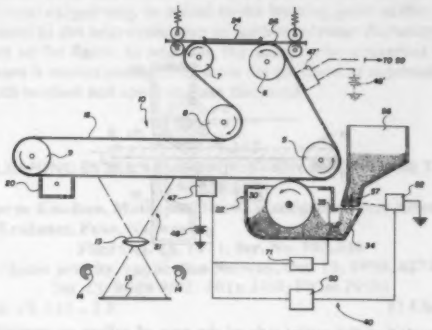
3,779,204

TONER CONCENTRATION AND AUTO BIAS CONTROL APPARATUS

Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,397
Int. Cl. G03g *13/16*
U.S. Cl. 118—8 **4 Claims**

A toner concentration and auto bias control apparatus includes a circuit for producing a signal which is a function of the charged density of an electrostatic image passing a predetermined position of a path, a toner concentration control apparatus responsive to such signal for controlling the toner concentration of a mixture of toner and carrier and an auto bias circuit responsive to such signal for adjusting the potential of a developed electrode to influence the toning process.

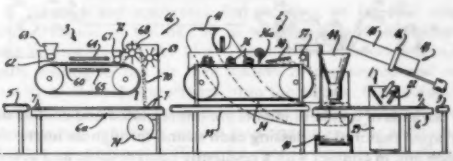


3,779,205

FOOD APPLICATOR

Harvey G. Kuhlman, N56 W21466 Silver Spring Rd., Menomonee Falls, Wis.

Division of Ser. No. 32,030, April 27, 1970, Pat. No. 3,682,106. This application Jan. 6, 1972, Ser. No. 215,765
Int. Cl. B05c *5/00*
U.S. Cl. 118—24 **3 Claims**



A conveyor for the bases includes a plurality of parallel longitudinally-spaced tined shafts which are simultaneously rotated to carry the pizza bases through the food-depositing stations. The tines on adjacent shafts are offset and overlapped to minimize the spacing therebetween. The open structure defined by the tined supports provides an open structure to permit removal and/or recovery of the excess food. The sauce applicator includes a pressurized sauce spray head located within an open bottom enclosure mounted above the tined conveyor and includes a fluid activated cleaning pin to prevent clogging of the nozzle. The meat applicator includes a transfer belt which is cooled and a rotating metering means to drop selected amounts of grated meat upon the bases.

3,779,206

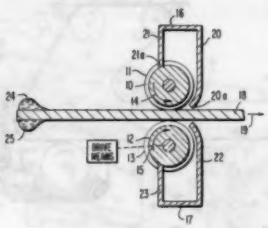
APPARATUS FOR SCRAPING LIQUID OFF OF SHEET MATERIAL

Masamichi Sato, and Isoji Takahashi, both of Asaka, Japan, assignors to Fuji Photo Film Company, Ltd., Nakanuma, Japan

Filed Jan. 20, 1972, Ser. No. 219,540
Claims priority, application Japan, Jan. 20, 1971, 46/1494
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 **5 Claims**

An apparatus for scraping liquid off of sheet material, for example, in photo developing, comprises a combination of a

pair of drive rollers having a flange or belt provided for feeding the sheet material by gripping both edges while not contacting the image portion with the rollers. Air supply boxes are



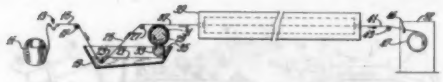
provided at the outlet side of the pair of rollers co-operating with the rollers to jet air onto the surface of the sheet material thereby blowing out any excess of the liquid.

3,779,207

APPARATUS FOR IMPREGNATING AND COATING FIBROUS STRANDS

Gustav E. Benson, Edgewood, and Paul D. Yakuboff, Woonsocket, both of R.I., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 12, 1971, Ser. No. 171,252
Int. Cl. B05c *11/02*; D06c *29/00*
U.S. Cl. 118—109 **15 Claims**



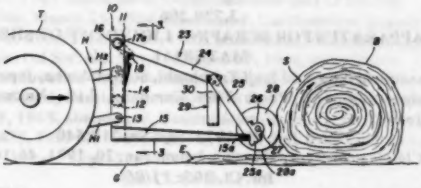
Strands of textile filaments are impregnated and coated with a liquid material by passing each strand through an immersion bath and in contact with a resiliently compressible and absorptive material which wipes off excess impregnant and coating from the strand. The path and tension of the strand is adjustable to vary the depth at which the strand is embedded into the absorptive material. The absorptive material is in the form of an endless surface constantly rotating to continuously present an unsaturated portion to the strand.

3,779,208

APPARATUS FOR HANDLING ROLLED BALES OF HAY

James E. Gay, Vinton, Iowa, assignor to Starline, Inc., Harvard, Ill.

Filed Aug. 2, 1972, Ser. No. 277,322
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **14 Claims**



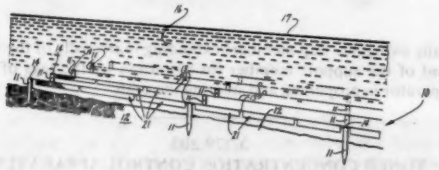
Apparatus for handling rolled bales of hay, and especially those rolled on the ground from a windrow of hay, which includes a frame that may be mounted on a farm tractor and that includes a roller for unrolling a bale onto the ground so that livestock may feed on the hay in the unrolled bale. In one form of the apparatus the unrolling means also forms part of a bale transporting fork lift device.

3,779,209

OYSTER GROWING APPARATUS AND METHOD

William W. Budge, Hillsborough, and Malcolm Donald, Woodside, both of Calif., assignors to Pacific Mariculture, Inc., Pigeon Point, Pescadero, Calif.

Division of Ser. No. 42,253, June 1, 1970, Pat. No. 3,638,615.
This application Sept. 23, 1971, Ser. No. 183,203
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **5 Claims**



Apparatus for growing oysters in sea water comprising a member mounted in sea water so that it is above the bottom level of the sea water at all times and below the top surface of the sea water for a substantial period of each 24 hours. A plurality of seed oysters are provided and a cement other than that excreted by the oyster seed secures the oyster seed to the member. The oysters are arranged in a predetermined pattern and are spaced in such a manner that the oysters can grow to a substantially larger size on the member without deforming each other.

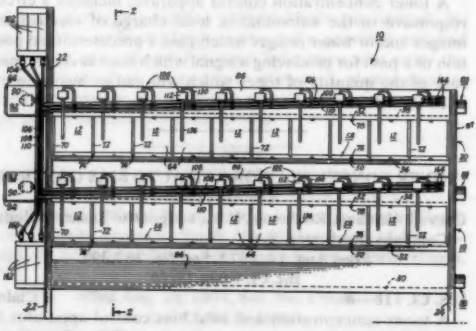
In the method, a member is positioned in the sea water so that it is disposed above the bottom level of the sea water and for a substantial period of time of each 24 hours, below the top surface of the sea water. Seed oysters are secured to the member using an adhesive and the oysters are arranged in a predetermined pattern and are spaced in such a manner so that they can grow to a substantially larger size without deforming each other.

3,779,210

INCUBATIVE ANIMAL CONFINEMENT SYSTEM

Bruce A. Blair, Winnetka, Ill., assignor to International Farm Systems, Inc., Streator, Ill.

Filed Apr. 5, 1972, Ser. No. 241,338
Int. Cl. A01k *01/02*
U.S. Cl. 119—18 **13 Claims**



An incubator for young animals is provided and includes a plurality of modular animal confinement pens. Each of the modular pens includes a flooring of an open-mesh grill work to

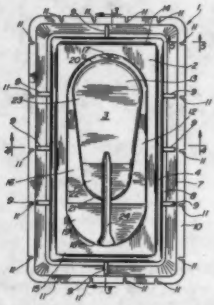
allow animal waste to fall through to a collecting trough where it can be flushed away and each pen is provided with feed supply means which is readily accessible to the animal confined therein connected to a precisely measured source of nourishment, such as milk, which is automatically and periodically replenished from a central source of supply. Means are provided to maintain an overpressure and a flow of conditional air through the pens and each pen is supplied with heating means to maintain a warm temperature for the animal therein.

3,779,211

OPERATING BOARDS

Donald E. Etes, Crystal Lake, Ill., assignor to Plas-Med, Inc., Crystal Lake, Ill.

Filed July 12, 1972, Ser. No. 271,060
Int. Cl. A61g *13/00*
U.S. Cl. 119—103 **14 Claims**



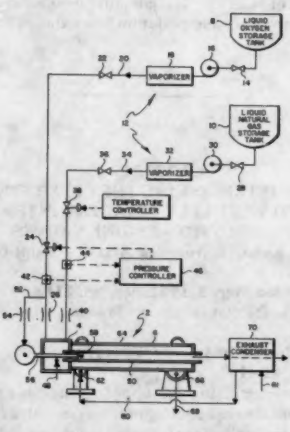
An operating board for small animals, and the like, which may be made of relatively thin plastic sheet material, or the like, and embodying a raised platform portion disposed within a fluid-retaining area.

3,779,212

NON-POLLUTING STEAM GENERATOR SYSTEM

William R. Wagner, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 12, 1972, Ser. No. 252,706
Int. Cl. F22b *31/00*
U.S. Cl. 122—23 **9 Claims**



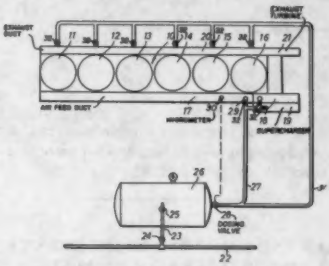
A steam generating system comprising burning fuel which contains no sulphur or nitrogen in an atmosphere of pure oxygen to heat water in a heat exchanger for converting water to steam. Preferably, the fuel and oxygen are provided in liquid or gaseous form and are supplied under pressure to the combustion chamber, to provide more rapid combustion, and additional oxygen may be added to the burning gases as they are passed to the heat exchanger to further increase the temperature of the flame. In addition, the water to be converted into steam is maintained isolated from the products of combustion. Both method and apparatus are disclosed.

3,779,213

CLEANING INTERNAL COMBUSTION ENGINES OR THE LIKE

Bjarne Knudsen, Mathopen, Norway, assignor to Ivar Rivenaes Krakenes, Fana, Norway

Filed Oct. 28, 1971, Ser. No. 193,316
Claims priority, application Norway, Oct. 10, 1970, 4274/70
Int. Cl. B08b *9/02;* **F01n** *3/00;* **F02m** *29/00*
U.S. Cl. 123—1 R **11 Claims**



A method and apparatus for cleaning an internal combustion engine or the like so as to remove carbon deposits, coke sediments and the like. The method involves intermittently adding to the air feed system of the engine and optionally to the exhaust stream from the engine, fluid cleaning medium for a predetermined period of time at predetermined time intervals while the engine is in operation. The addition is effected via pressure diffusor jet means directly into the air stream and optionally the exhaust stream while the relative humidity of air and cleaning fluid is controlled. In the apparatus, the pressure diffusor means communicates via valve-controlled conduit means with a container for storing cleaning fluid under pressure. The jet means is arranged to discharge into the air feed system and optionally into the exhaust system, each system having a hygrometer inserted therein downstream relative to the jet means and for control of a dosing valve in said conduit means to maintain the humidity between 60 percent and 75 percent, measured at a temperature of 30° C within said system.

3,779,214

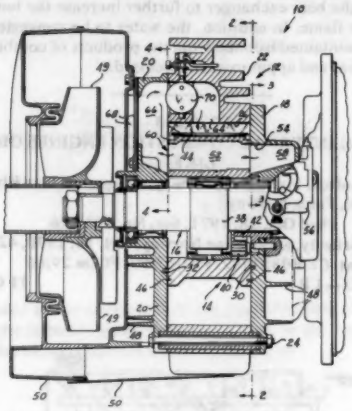
ROTARY COMBUSTION ENGINE HAVING A CHARGE-COOLED ROTOR AND SIDE AND PERIPHERAL WALL INTAKE PORTS

Harry M. Ward, III, Waukegan, Ill., and Eugene R. Hackbarth, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 13, 1972, Ser. No. 297,254
Int. Cl. F02b *55/06*
U.S. Cl. 123—8.01 **10 Claims**

In a rotary internal combustion engine, having a charge-cooled rotor and intake ports in a housing side wall and housing peripheral wall, the intake ports are in communication with the rotor to receive all of the fuel-air mixture after it has flowed through the rotor. The flow through the intake port in the side wall is controlled by the rotor in its rotation within the housing while the flow through the intake port in the

peripheral wall is throttled by a valve actuated in response to the speed or load of the engine so that, simultaneously with efficient cooling of the rotor, the engine derives the benefit of side intake and peripheral intake ports for smooth engine performance from idle to full speed.



3,779,215

INTAKE AND EXHAUST ARRANGEMENT FOR A ROTARY-PISTON INTERNAL COMBUSTION ENGINE

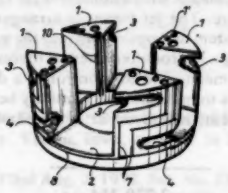
Huschang Sabet, Eduard-Pfeiffer-Strasse 67, Stuttgart, Germany

Continuation-in-part of Ser. No. 137,870, April 27, 1971, Pat. No. 3,736,080. This application Aug. 30, 1972, Ser. No. 284,896

Claims priority, application Germany, Sept. 25, 1971, P 71 36 462.0

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.47 **9 Claims**



An internal combustion engine, in which two sets of four pistons rotate about the axis of a cylindrical casing wall and additionally move angularly relative to each other about the casing axis to expand and contract combustion chambers circumferentially extending between the pistons of the two sets having circumferential faces of different width, and each wider circumferential face is formed with two radially open grooves in respective axially spaced planes, the two grooves being open only in respective, opposite, circumferential directions for communication with respective combustion chambers and connecting the combustion chambers from time to time with intake and exhaust ports formed in the casing in the aforementioned axially spaced planes.

3,779,216

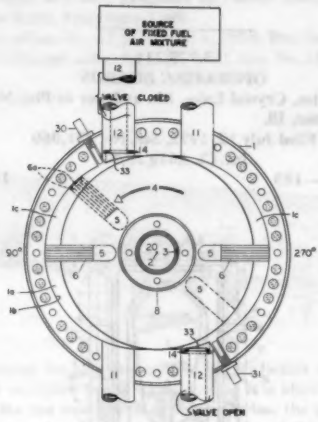
VARIABLE EXPLOSION-DISPLACEMENT ROTARY ENGINE

Robert Gordon Britt, 242 Connecticut Ave., Spartanburg, S.C.

Filed June 5, 1972, Ser. No. 259,741

Int. Cl. F02b *53/06*

U.S. Cl. 123—8.49 **9 Claims**



A variable explosion-displacement rotary engine, free of a fuel compression cycle, and specifically designed for use with pollution free fuels of the alkyne type; and others, having a cylindrical rotor revolving in an elliptical opening of a housing to define two annular spaces on two sides therebetween. The rotor having radial members which project to follow without sealing the contour of the elliptical opening to form volume expanding combustion areas behind said members. High speed tungsten poppet valves mounted in the fuel input ports which extend into the combustion areas open and close via differential in pressures to admit fuel periodically between explosions, the engine providing four explosions in one shaft revolution. Ignition timing cooperating with the position of said members and the volume of fuel displaced controls the explosive force, the explosion displacement, engine torque and shaft revolutions per minute. The volume of fuel exploded is in direct proportion to the amount of horsepower required at any moment with the fuel-air mixture precisely fixed for complete combustion and pollution free exhaust.

3,779,217

DEVICE FOR INTERLINKING THE UPPER SPRING-CAPS OF TWO MUTUALLY ADJACENT INTERNAL-COMBUSTION-ENGINE VALVES

Karl Walter Kuhn, 5, rue des Arcades, Saint-Germain-en-Laye, France

Filed Mar. 3, 1972, Ser. No. 231,610

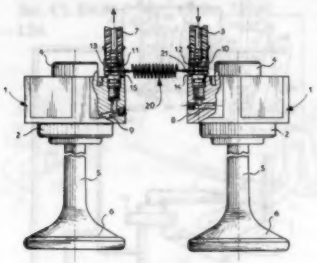
Claims priority, application France, Mar. 10, 1971, 7108330

Int. Cl. F01p *3/14;* **F01l** *1/46, 31/00*

U.S. Cl. 123—41.41 **7 Claims**

Device for interlinking the upper spring-caps of two mutually adjacent internal-combustion-engine valves comprising a tension spring or resilient element, the mutually opposite ends of which are respectively attached to the said spring-caps.

In one embodiment the opposite ends of said spring are attached respectively to the couplings that interconnect flexible



pipes that deliver cooling fluid to the spring caps of said valves.

3,779,218

IGNITION TIMING CHANGE-OVER DEVICE FOR SPARK ADVANCE MECHANISM HAVING ROTATABLE GOVERNOR PLATE

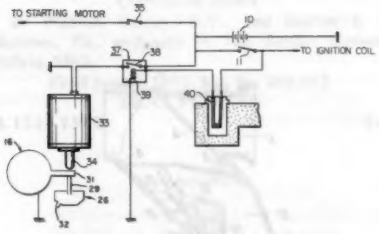
Shyuya Nambu, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Oct. 22, 1970, Ser. No. 82,868

Claims priority, application Japan, Oct. 22, 1969, 44/84541

Int. Cl. F02p *5/10, 5/14*

U.S. Cl. 123—117 A **4 Claims**



An ignition timing change-over device adapted for use with a spark advance mechanism having a rotatable governor plate. A plunger means is adapted to protrude and rotate the governor plate to an angular position in which an ignition advance occurs during the cold operating conditions of the engine irrespective of the intake manifold vacuum. In one embodiment, the plunger means is actuated to hold the governor plate in the advance position during closure of a starting switch. Another embodiment employs a relay and a thermostatically controlled switch to keep the plunger means in the advance position during the engine warm-up operation. A further embodiment comprises a thermostatically operated plunger which is operative to rotate the governor plate through a mechanical linkage during the engine warm-up operation.

3,779,219

DEVICE FOR CONTROLLING IGNITION TIMING OF ENGINE

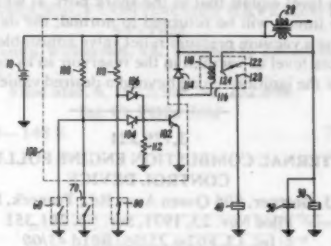
Toshikazu Saita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1971, Ser. No. 111,425

Claims priority, application Japan, Feb. 4, 1970, 45/11408; Feb. 10, 1970, 45/13391

Int. Cl. F02p *5/04*

U.S. Cl. 123—117 R **14 Claims**



A switching transistor is placed in its conducting mode when a sensor switch senses certain operating conditions of an engine such as the idling in which the ignition timing should lag and, is placed in its nonconducting mode when a separate sensor switch senses operating conditions of the engine such as the starting in which the ignition timing is normal. When conducting, the transistor operates a relay to enable one contact set to generate an ignition voltage across an ignition coil at a time later than the normal ignition timing. When nonconducting, the transistor maintains the relay in its normal position to enable another contact set to generate an ignition voltage across the coil at the normal ignition timing. Alternatively, the contact sets each may be open to render another conducting transistor nonconducting to interrupt a primary ignition coil.

3,779,220

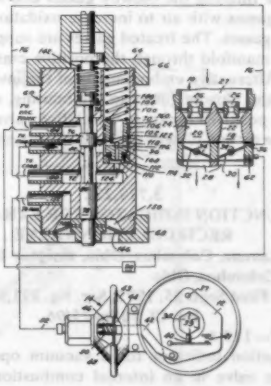
DISTRIBUTOR VACUUM SPARK ADVANCE CONTROL VALVE WITH REGULATOR

Tao-Yuan Wu, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 8, 1972, Ser. No. 232,806

Int. Cl. F02p *5/04*

U.S. Cl. 123—117 A **15 Claims**



An engine spark timing control system includes a conduit connecting carburetor spark port vacuum to the distributor servo actuator in parallel paths one of which contains an ori-

fice for normally slowly advancing and retarding the ignition timing as a function of changes in spark port vacuum; the system also including a device that has a valve operable in response to predetermined acceleration movements of the throttle valve to disconnect or block the direct connection from the spark port to the distributor servo while at the same time connecting a vacuum reservoir to the distributor servo to artificially advance the ignition timing above the value that normally would be called for by the level of the vacuum at the spark port; the higher than normal advance decaying by bleed of the vacuum through the spark port line orifice until the vacuum level equals that at the spark port, at which time the ignition timing will be returned to normal; the device further including a vacuum pressure relief valve adjustable to limit the maximum level of vacuum in the reservoir so as not to unduly advance the ignition timing beyond a desired value.

3,779,221

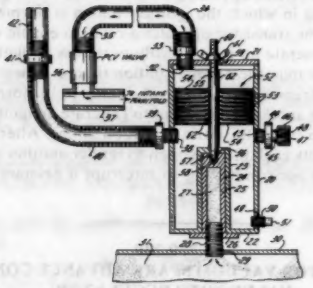
INTERNAL COMBUSTION ENGINE POLLUTION CONTROL DEVICE

Joseph J. Gartner, 506 Queen Anne Rd., Teaneck, N.J.

Filed Nov. 23, 1971, Ser. No. 201,351

Int. Cl. F02m *25/06*; **B01d** *45/00*

U.S. Cl. 123—119 B **12 Claims**



A pollution control device for automobile engines and the like is provided having a housing adapted to receive the blowby gasses from the engine crankcase. The housing has a filter assembly for filtering the blowby gasses and inlet means for mixing the gasses with air to increase oxidation of the pollutants in the gasses. The treated gasses are supplied to the engine intake manifold through the positive crankcase ventilation valve. Alternative embodiments of the invention provide for heating the blowby gasses in the housing, eliminating the need for the positive crankcase ventilation valve, and for sonic mixing of the air and blowby gasses in the housing.

3,779,222

MALFUNCTION INDICATOR FOR EXHAUST GAS RECIRCULATION VALVE

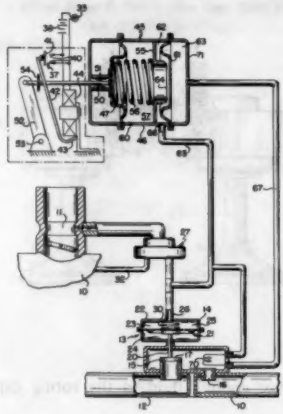
Jerome L. Lorenz, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed Sept. 25, 1972, Ser. No. 291,984

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **4 Claims**

A malfunction indicator for a vacuum operated exhaust recirculation valve in an internal combustion engine comprises an indicator means actuated in response to attainment of a gradually drawn vacuum in a chamber communicating with the valve operating vacuum source, the chamber adapted to be cut off from the vacuum source prior to attainment of the actuating vacuum by a valve operated in response to a given increase in resistance to flow of air through a capillary tube comprising a section of conduit connected to the vacuum source and subjected to the high temperatures of exhaust passing through the valve.



3,779,223

METHOD AND APPARATUS FOR MIXTURE PREPARATION OF INTERNAL COMBUSTION ENGINES

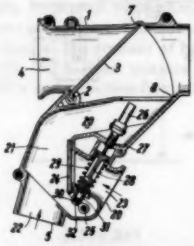
Ferdinand Piech, Stuttgart-Nord, and Sepp Schmitt, Stuttgart-Ost, both of Germany, assignors to Dr.-Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Mar. 3, 1972, Ser. No. 231,622

Claims priority, application Germany, Mar. 5, 1971, P 21 10 484.7

Int. Cl. F02m *31/04*

U.S. Cl. 123—122 D **37 Claims**



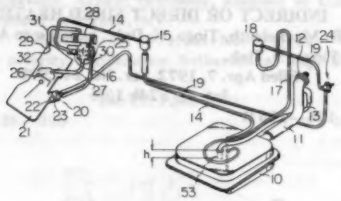
A method and apparatus for the mixture preparation of internal combustion engines in which an adaptation of the suction air temperature to the varying operating and load conditions of internal combustion engines for motor vehicles is achieved; possibly exclusively preheated air is thereby supplied to the internal combustion engine by way of the suction system in the partial load range while exclusively fresh air flows into the combustion engine in the full load range whereby the warm air serving for the mixture formation has a substantially constant temperature over the entire range of its admixture.

3,779,224

AIR-POLLUTION PREVENTIVE SYSTEM

Katsuhiro Tagawa, and Takuzo Kurosawa, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Mar. 1, 1972, Ser. No. 230,739
Int. Cl. B65d *25/00*; **F02m** *59/00*
U.S. Cl. 123—136 **5 Claims**



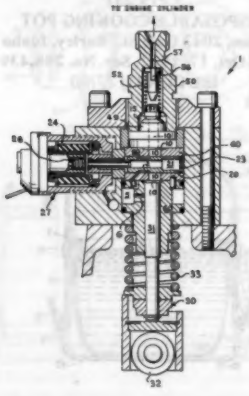
An air-pollution preventive system for a gasoline-powered internal combustion engine, adapted to eliminate the evaporation of gasoline vapors from the fuel tank to the atmosphere. The gasoline vapors emitted from the fuel tank are introduced through a passage to the crankcase and admitted through the carburetor to the engine combustion chamber together with blow-by gases in the crankcase. The flow of gasoline vapors into the crankcase is controlled by a pair of check valves adapted to be responsive to pulsations of the pressure in the crankcase caused by the reciprocating motion of the piston. An additional valve is provided intermediate the passage leading from the fuel tank to the crankcase and is adapted to be automatically closed to block the passage upon opening of a closure member of a filler vessel for fuel replenishing purposes. The valve cooperates with an air escape pipe to prevent the fuel tank from being filled to its full capacity without leaving any unoccupied space for thermal expansion of the content.

3,779,225

RECIPROCATING PLUNGER TYPE FUEL INJECTION PUMP HAVING ELECTROMAGNETICALLY OPERATED CONTROL PORT

Edwin B. Watson, Sidney, N.Y., and Harlan I. Fuller, Doylestown, Pa., assignors to The Bendix Corporation, Southfield, Mich.

Filed June 8, 1972, Ser. No. 260,882
Int. Cl. F02d *5/00*
U.S. Cl. 123—139 E **6 Claims**



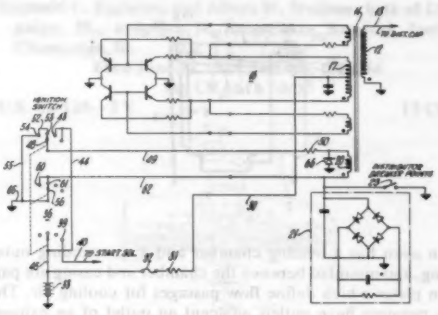
A fuel injection system for an internal combustion engine of the type having a reciprocating piston pressure pump that includes an electromechanically operated relief or control valve that is arranged so that the face of the valve is not subjected to the pressurized fluid in the pumping chamber, thereby requiring less electromechanical energy to open and close the valve. In this type of arrangement it is now possible to control the opening and closing of the relief valve independently of the reciprocating motion of the piston which pressurizes the fuel in timed relation to rotation of the camshaft or crankshaft of an internal combustion engine.

3,779,226

HIGH FREQUENCY CONTINUOUS WAVE IGNITION SYSTEM

Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,094
Int. Cl. FO2p *3/02*
U.S. Cl. 123—148 E **7 Claims**



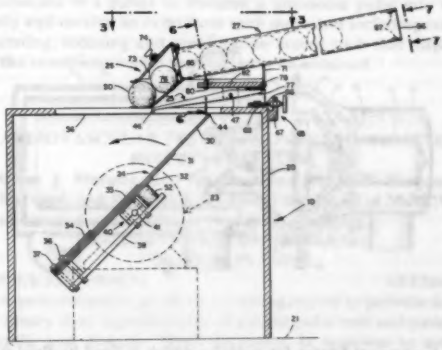
An ignition system employing continuous-wave high-frequency spark energy, makes use of a special ignition-switch circuit. The special circuit switches only control winding current of an oscillator that supplies the spark energy. Consequently, high current oscillator energy may be directly and permanently connected.

3,779,227

SPRING TYPE PROJECTING DEVICE

Walter T. Scott, Huntingdon Valley, Pa., assignor to Duncan Pollitt, Titusville, N.J. and Roger Coe, Paoli, Pa.

Filed Dec. 22, 1971, Ser. No. 210,920
Int. Cl. F41b *7/00*
U.S. Cl. 124—16 **7 Claims**



Apparatus is disclosed for propelling game balls or like objects sequentially in a desired trajectory. A rotating elongated

leaf spring, being bent over its entire length by the combined action of a trip lever and a fulcrum, is used to propel the objects. The trip lever, when engaged by the elongated leaf spring, pivots to separate the object to be propelled from the flow of objects from a magazine and to retain the elongated leaf spring in a stressed and cocked condition. The apparatus prevents overloading of the leaf spring and also prevents extended vibration of the leaf spring by the use of leaf springs and snubbing spring.

3,779,228

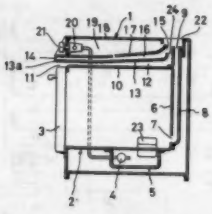
COOLING APPARATUS FOR AN OVEN

Sueo Mizuno, Higashikasugai-gun, and Tadayoshi Takase, Nishikamo-gun, both of Japan, assignors to Kabushiki Kaisha Rinnai Seisakusho, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 29, 1971, Ser. No. 128,851

Int. Cl. F24c *3/00*

U.S. Cl. 126—21 R **2 Claims**



An oven has a heating chamber and a surrounding outer casing, and mounted between the chamber and casing are partition plates which define flow passages for cooling air. The flow passages have outlets adjacent an outlet of an exhaust channel of the heating chamber so that air flow is produced in the passages by suction effect caused by exhaust flow through the outlet of the exhaust channel. A manual control knob of a burner valve disposed in a space between the uppermost partition plate and the outer casing is cooled by proximity to the flow passages.

3,779,229

HEATER FOR VEHICLES

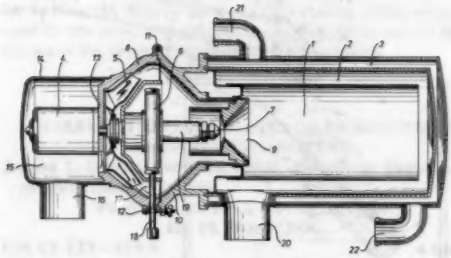
Hartwig Volbehr, Lochham, Germany, assignor to Webasto-Werke W. Baier KG, Stockdorf/Munich, Germany

Filed Sept. 17, 1971, Ser. No. 181,316

Claims priority, application Germany, Oct. 3, 1970, P 20 48 760.9

Int. Cl. F24h *3/06*

U.S. Cl. 126—110 B **11 Claims**



A compact heater for vehicles which is fired by fluid fuels and wherein one half of a split casing is arranged in the burner assembly, while the other half carries the combustion chamber and the heat exchanger. The burner assembly includes, in coaxial succession, an electric drive motor, an impeller for the combustion air, a central air guide, a fuel pump and an atomizing nozzle extending therefrom into the burner head at the mouth of the combustion chamber. The casing halves can be pivoted open for convenient access to the parts of the burner assembly.

3,779,230

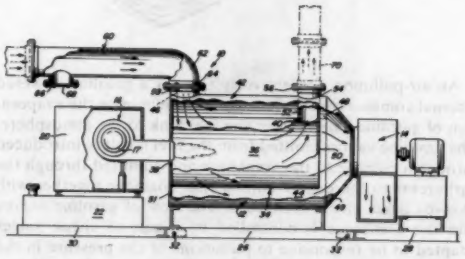
INDIRECT OR DIRECT FIRED HEATER

Ernest R. Muckelrath, Tioga, N. Dak., assignor to Air Heaters, Inc., Tioga, N. Dak.

Filed Apr. 7, 1972, Ser. No. 241,998

Int. Cl. F24h *3/06*

U.S. Cl. 126—116 R **11 Claims**



A selectively indirect and direct-fired air heater has a fire tube and sheel section, a blower section detachably connected to the fire tube and shell section and arranged for moving air therethrough, and a plurality of heating units selectively connectible to the fire tube and shell section for passing combustion gases to a fire tube thereof. Each heating unit is designed to burn a different type of fuel. The fire tube and shell section has a housing provided with a wall defining the fire tube. A shell is arranged in heat exchange relation with respect to the housing, and is provided with a wall arranged around the housing wall and defining a fluid or airflow passage having inlet and outlet openings. The fire tube has an outlet opening having a flanged duct surrounding same. A pipe in communication with the shell inlet opening is provided with a flange which is selectively joinable with the flanged duct for selectively connecting the fire tube outlet opening to the shell inlet opening for cycling combustion gases through the airflow passage. The firing is direct when the fire tube outlet is so connected, and indirect otherwise.

3,779,231

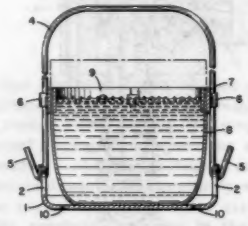
DISPOSABLE COOKING POT

Rodney J. Anderson, 2043 Gale St., Burley, Idaho

Filed Oct. 17, 1972, Ser. No. 298,439

Int. Cl. A47j *27/00*

U.S. Cl. 126—373 **3 Claims**



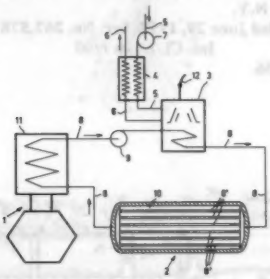
A light weight disposable cooking pot for use over open fires made up of a bottom plate, a handle attached to the bot-

tom plate, a collar slidably mounted on the handle, a paper liner forming the container for the food to be cooked positioned within the collar and resting on the bottom plate and an expansible ring to secure the liner against the interior of the collar.

3,779,232
HEAT ACCUMULATOR

Johann Schroder, Achen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,761
Claims priority, application Netherlands, Aug. 29, 1970, 7012830
Int. Cl. F24h *7/00*
U.S. Cl. 126—400 **10 Claims**

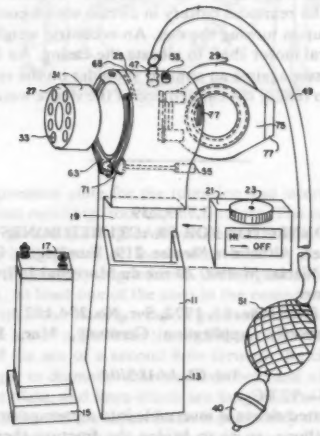


A heat accumulator comprising a eutectic mixture of NaF and magnesium fluoride having a melting point of less than 850°. The mixture may additionally comprise potassium fluoride and/or calcium fluoride. The heat accumulator is suitable for supplying thermal energy to a hot-gas engine and for use in heat accumulating ovens.

3,779,233
SPECULUM INSTRUMENT WITH DISPOSABLE FORWARD SECTION

Seymour Saslow, and Jerome A. Roberts, both of Saratoga Springs, N.Y., assignors to Espey Mfg. & Electronics Corp., Saratoga Springs, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,138
Int. Cl. A61b *1/06*; **F16l** *35/00*, *55/00*
U.S. Cl. 128—6 **5 Claims**

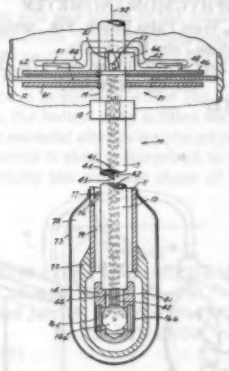


Speculum instrument for use with disposable plastic (polyethylene) sigmoidoscope or proctoscope tube. The elongated tubes are tapered to provision for the geometric optics employed, and contain a light shield, which acts to diffuse the light source and also protect the light source and instrument from cantamination. The tubes contain a rectangular groove that provides for its captivation by the instrument. A disposable plastic obturator is also provided with each tube. The instrument is fitted with a cylindrical lamp holder assembly having a plurality of lamps, an eye piece that allows one to look through the cylinder of lamps, a spring retaining ring that provides for the colleting of the disposable tubes, a cam push button arrangement for opening the retaining ring collet and ejecting the disposable tube, a handle that contains a rechargeable battery, a reostat with thumb wheel which controls the amount of light, a fitting for rubber tubing to allow for the admission of air, an air valve for the release of air, and gasket seals to provide for an air tight assembly.

3,779,234
ULTRASONIC CATHETER WITH ROTATING TRANSDUCERS

Reginald C. Eggleton, and Albert W. Weidner, both of Champaign, Ill., assignors to Interscience Research Institute, Champaign, Ill.

Filed June 30, 1971, Ser. No. 158,154
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V **13 Claims**



An instrument and method which allows real time examination of internal organs of the body such as the heart comprising a catheter which has a rotating tip in which a number of ultrasonic transducers are mounted and which can be selectively connected to a pulser to transmit a ultrasonic pulse into the body and receive an echo from such pulse and including commutating, indexing and presentation means such that display of the conditions within the body may be obtained.

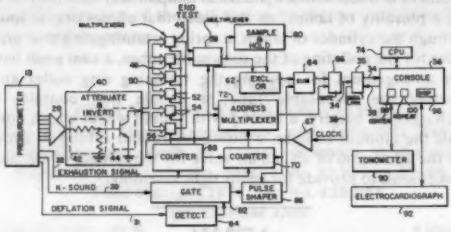
3,779,235
CARDIOVASCULAR TEST STATION PRESSUROMETER INTERFACE SYSTEM

William J. Murphy, Jr., Framingham; Joseph B. Ferguson, Harvard, and Edward B. Rawson, Lincoln, all of Mass., assignors to Searle Medidata Inc., Waltham, Mass.

Filed June 18, 1971, Ser. No. 154,561
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 M **15 Claims**

A pressurometer interface circuit operative to provide serial, binary data representative of patient pulse rate and patient systolic and diastolic blood pressures. In response to automatic inflation and deflation of a cuff the interface circuit receives in parallel a plurality of bilevel signals, each associated with a given cuff pressure and indicating whether a

Korotkoff sound response is detected at the cuff pressure. The bilevel signals are converted, for efficient data communication, to serial binary coded data representative of the boundaries of the range of pressures during which Korotkoff sounds are exhibited. Further binary data is generated indicating patient pulse rate as interpreted from the Korotkoff sounds during deflation.

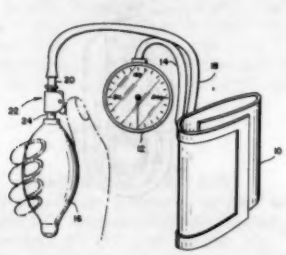


3,779,236

PRESSURE RELIEF VALVE FOR A SPHYGMOMANOMETER

James M. Stewart, West Palm Beach, Fla., assignor to Stewart Research, Inc., West Palm Beach, Fla.

Filed Sept. 7, 1971, Ser. No. 178,212
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 G **9 Claims**



A pressure relief valve assembly particularly for use with a sphygmomanometer having a housing, an internal axial bore for passing pressurized air through the housing, a transverse bore intersecting the axial bore and communicating with the exterior of the housing, a flexible, resilient member mounted within the axial bore and sealing off the intersecting end of the transverse bore, and actuating means extending through the transverse bore for depressing the resilient member away from sealing relationship with the transverse bore to permit selective relief of the pressurized air.

3,779,237

METHOD AND SYSTEM FOR AUTOMATIC PROCESSING OF PHYSIOLOGICAL INFORMATION IN GREATER THAN REAL TIME

Richard R. Goeltz, Greece; Howard Schumacher, Rochester, and Albee Roth, Far Rockaway, all of N.Y., assignors to Electrocardio Dynamics, Inc., Rochester, N.Y.

Filed Apr. 13, 1971, Ser. No. 133,627
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **74 Claims**

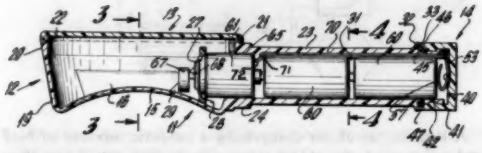
A system and method is described whereby electrocardiograph signals are translated into digital data which represents certain cardiac events. This digital data controls an electrocardiogram recorder for recording the cardiac complexes which manifest only those events which are represented by the digital signals. In this way the system is capable of processing long term (for example 24-hour) durations of activity so as to select only such data of particular interest as for example data which represents abnormalities and diseases of the heart.

3,779,238

WATERPROOF BATTERY OPERATED VIBRATOR

Lester M. Cutler, Roslyn Heights, and Paul Friedman, Old Westbury, both of N.Y., assignors to Vibra-Spa Products, Inc., Roslyn, N.Y.

Filed June 29, 1972, Ser. No. 267,578
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 **24 Claims**



The casing of this vibrator comprises three molded parts. The first molded part comprises a head having a bottom wall from which an annular side wall extends upwardly. An integral sleeve handle extends from the side wall at right angles to the axis of the bottom wall. The second molded part comprises a top cover fitted on the side wall and having a heat-sealed watertight connection therewith. The third molded part comprises a cap which has a bayonet, removable, rotary connection to the outer end of the sleeve. An electric motor in the sleeve projects into the interior of the head. An integral flange or wall extends up from the bottom wall and is formed with a hole into which the forward end of the motor projects for support. Dry batteries back up the motor in tandem, within said sleeve handle. The cap carries a switch for ON and OFF connection of the rearmost battery in circuit with a connector to the motor, upon turning the cap. An eccentric weight is fixed to the central motor shaft to vibrate the casing. An O-ring on the cap presses against an annular shoulder on the rear end of the sleeve to render the capped end of the sleeve watertight.

3,779,239

CONNECTOR FOR FRACTURED BONES

Artur Fischer, Altheimer Strasse 219, Tumlingen, Germany, and Jean-Nicolas Muller, 20 rue du Marechal Joffre, Strassburg, France

Filed Mar. 13, 1972, Ser. No. 234,102
Claims priority, application Germany, Mar. 13, 1971, P 21 2 139.1
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 BC **7 Claims**

An elongated sleeve is insertable into a passage provided in a fractured bone, so as to bridge the fracture thereof. The front end of the sleeve carries an expansion anchor sleeve which is longitudinally slotted so that its circumferential wall is composed of strips which are connected only at the leading

and trailing ends. The strips are buckled in radially outward direction by inserting a rod through the sleeve and connecting

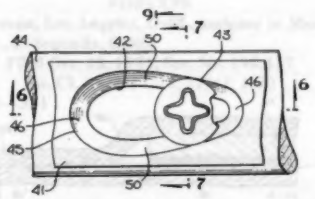
it with the leading end of the expansion anchor sleeve so as to exert a rearwardly directed tensile force upon the same, causing its buckling.

3,779,240

COMPRESSION PLATE FOR OSTEOSYNTHESIS

Shigeru Kondo, 13 Kamibanba-cho, Jodoji, Kyoto, Sakyo-ku, Japan

Filed Mar. 31, 1972, Ser. No. 240,243
Int. Cl. A61f *5/04*; A61b *17/18*
U.S. Cl. 128—92 D **4 Claims**



A compression plate for the retention and internal fixation of fragments resulting from a bone fracture. The compression plate is of generally elongate structure and is adapted to be attached to both pieces of the broken bone by screws fitting within slots generally aligned with the length of the compression plate. At least one of the slots in the compression plate is formed with a slot having a taper, generally defined by a portion of the arc of a first hole through the compression plate, a portion of the arc of a second hole through the compression plate, larger in diameter than the first hole and closer to the end of the plate, and lines which are tangential to both holes. The top surface of the tapered slot is preferably chamfered so as to better mate with a screw having a tapered head. Thus, tightening of the screw in the tapered hole causes progression of the compression plate along its axis to encourage and retain the fracture surfaces in firm abutment.

3,779,241

INTRAUTERINE CONTRACEPTIVE DEVICE AND METHOD FOR ITS USE

William O. Vennard, and Jack C. Wright, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Oct. 20, 1971, Ser. No. 190,780
Int. Cl. A61f *5/46*
U.S. Cl. 128—129 **11 Claims**

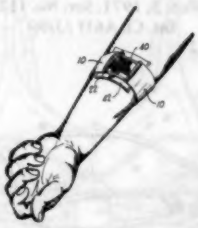
A method and apparatus for birth control utilizing an intrauterine contraceptive device which includes a preformed, hollow body with thin, flexible walls, the hollow body having the approximate size and shape of the uterine cavity. A flexible, compressible, filler material substantially completely fills the hollow body so that the walls of the hollow body make contact with a major portion of the walls of the uterine cavity when the device is in position within the uterine cavity. In a preferred form, the hollow body is filled with a polymerizable organosiloxane material after being placed in the uterine cavity and the material is then polymerized to produce a device having substantially the size and shape of a normal uterine cavity.

3,779,242

PERFORATED COMPOSITE BANDAGE

Gerald W. McCullough, 1038 N. Flood St., Norman, Okla.

Filed July 19, 1971, Ser. No. 132,482
Int. Cl. A61f *13/00*
U.S. Cl. 128—171 **4 Claims**



A bandage for maintaining a dressing in contact with a wound, which bandage includes a monoplanar sheet of fabric having a straight side edge, and having spaced perforation lines intersecting the side edge at spaced points. A relatively stiff rod is secured to the fabric sheet along the straight side edge and extends from one end of the side edge to the other. The rod has weakening notches spaced therealong at the intersections of the perforation lines with the side edge. A portion of the sheet is covered with an adhesive, which is in turn covered by a removable non-adhesive protective sheet. Between the covered adhesive area and the straight side edge

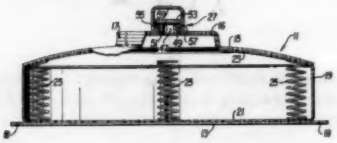
is an adhesive-free area. The sheet of fabric is perforated on opposite sides of each of the perforation lines adjacent the rod so that notches may be provided at this location.

3,779,243

CONTAMINATION FREE SURGICAL EVACUATOR

Jimmy D. Tussey; George W. Oakes, both of South Boston, Va.; Herbert F. Carr, Ozark, Ala., and Irving Melnick, Danville, Va., assignors to Said Melnick and said Oakes by said Carr and Said Oakes by said Tussey

Filed Oct. 15, 1971, Ser. No. 189,563
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 **18 Claims**



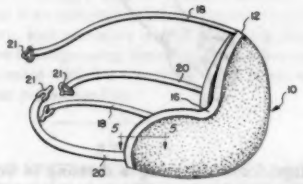
A contamination free surgical evacuator comprising an evacuator bag having valves in the input (drain) and the output (purge) lines leading to and from the bag is disclosed. The drain valve is a one-way flap valve that allows fluids to enter the bag from a patient yet prevents fluids from returning to the patient. The purge valve is a one-way magnetic valve that allows drained fluids to be purged from the evacuator bag without allowing contaminants to enter the bag. The evacuator bag is collapsible and is located between a pair of rigid plates, one of which curves outwardly. The drain and purge valves are located in the outwardly curved rigid plate with the purge valve being located in a cup-like trap that projects outwardly from the center of the curved shaped plate. The cup-like trap includes graduations which allow the evacuator to be utilized as an instrument to measure the rate of drainage from a patient.

3,779,244

DISPOSABLE FACE RESPIRATOR

Thomas Joseph Weeks, Jr., Valley Cottage, N.Y., and George Paul Reimschussel, Flemington, N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,364
Int. Cl. A61f *13/00*
U.S. Cl. 128—146.2 **14 Claims**



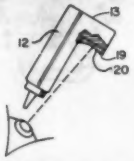
A respirator mask is formed by a filter medium that comprises a majority of the face portion of the mask and edge sealing means. The filter medium includes at least two layers of interfelted fibers: (*a*) a backing layer of fibers, and a binder, and (*b*) a filter layer including fibers having a fine diameter. The filter medium is formed by sequentially depositing solids on a foraminous mold having the desired shape of the interior of the mask, from separate aqueous slurries. A pressure differential is applied across the foraminous mold to cause the fluid portion of each slurry to pass through the mold and to deposit solids on the mold.

3,779,245

DEVICE FOR APPLYING MATERIALS TO THE AREA OF THE EYE

Robert K. Windsor, 417 Spruce St., Philadelphia, Pa.

Filed June 13, 1972, Ser. No. 262,384
Int. Cl. A61m *1/00*
U.S. Cl. 128—233 **3 Claims**



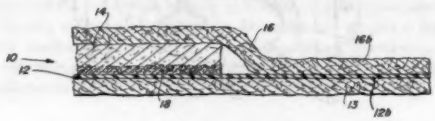
A device to be used for applying materials to the area of the eye which comprises an applying means for applying materials to the area and a mirror so that the user can see his eye reflected therein during the applying process.

3,779,246

DISPOSABLE DIAPER

Frederick K. Mesek, Downers Grove, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Oct. 7, 1971, Ser. No. 187,473
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **6 Claims**



A disposable multi-layer diaper of high absorptive capacity is provided which comprises as a first layer, to be brought into contact with an infant's skin, a porous, fibrous, non-woven bonded facing web of controlled wettability made of mixed long and short fibers. A second layer, in juxtaposition to the facing layer, is a highly porous, loosely compacted cellulosic batt having greater wettability than that of the facing web. Beyond the cellulosic batt is an impervious backing sheet adhered to the batt over a widely distributed area of adhesion. The final or outermost layer is a fibrous material which is adhered to the backing sheet, and which enables the diaper to have the feel and handle of a cloth diaper. The outermost layer, preferably, is a non-woven web made of mixed long and short fibers that are bonded together with a water-repellent bonding agent.

3,779,247

LOOP COLOSTOMY BRIDGE

John L. Nolan, Glenview; Arnold A. Rivin, Chicago, and Bremen I. Johnson, Cary, all of Ill., assignors to Hollister Incorporated, Chicago, Ill.

Filed Aug. 2, 1971, Ser. No. 168,177
Int. Cl. A61b 17/00
U.S. Cl. 128—303 R 6 Claims

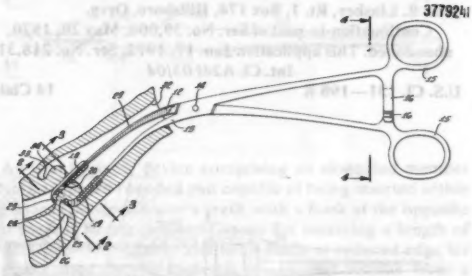
During a temporary colostomy a structurally unique bridge is used to prevent premature withdrawal of the intestine back into the abdominal cavity. A surgeon opens the abdominal wall and eases a short loop of intestine out of the opening. The colostomy bridge, having lateral extensions at each end, is positioned beneath the section of exposed intestine and is laid flat against the abdominal wall. If only a short loop of intestine is brought out of the abdominal cavity, the colostomy bridge may be folded and threaded beneath that portion of exposed intestine, then unfolded and laid flat against the abdominal wall. The bridge spans the incision beneath the section of exposed intestine to prevent withdrawal of the intestine into the abdominal cavity and by its structure is prevented from accidentally working out from beneath the intestine. After the medical objectives have been accomplished, the bridge can be folded and removed easily without cutting and without discomfort to the patient.

3,779,248

FORCEPS

Harvey Karman, Los Angeles, Calif., assignor to Medical Concepts, Inc., El Segundo, Calif.

Filed Oct. 18, 1971, Ser. No. 190,117
Int. Cl. A61b 17/28, 17/42, 1/30
U.S. Cl. 128—321 3 Claims



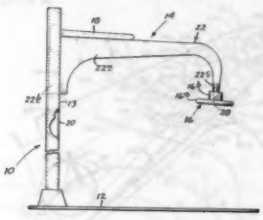
A forceps for medical use, particularly for gripping the cervix without tissue damage and having jaws with fixed or removable and disposable tips. A forceps with one tip having an inwardly turned smooth convex edge and the other tip having a smooth concave edge, preferably semicircular, with the one tip positionable within the arc of the other for cradling and gripping the cervix during interuterine medical procedures.

3,779,249

ARTERY CLAMP

Herbert J. Semler, 2330 N. W. Flanders, Suite 105, Portland, Oreg.

Filed Apr. 19, 1972, Ser. No. 245,528
Int. Cl. A61b 17/12
U.S. Cl. 128—325 3 Claims



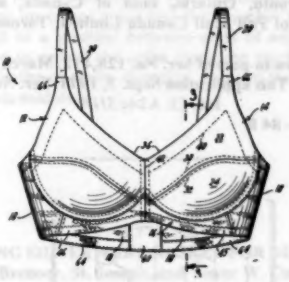
An artery clamp including a base, a support joined to the base, and a pressure-pad-bearing arm structure slidably mounted on, and releasably lockable at any position along, the support. The clamp is used, for example, following catheterization or needle puncture of a femoral artery to compress the artery while coagulation occurs, freeing a physician or nurse for other duties.

3,779,250

BRASSIERE

Alfreda Radomski, Trumbull, Conn., assignor to Warnaco Inc., Bridgeport, Conn.

Filed Mar. 20, 1972, Ser. No. 236,329
Int. Cl. A41c 3/00
U.S. Cl. 128—489 7 Claims



A brassiere wherein left and right bust cups are fashioned from a single layer of soft, resilient material. The upper bust edge of each of the bust cups includes a reinforcement band of the same material as the bust cups. The upper edge of the reinforcement band is secured to the upper edge of the bust cups with elasticized thread thereby providing an accomodating, comfortable garment. The lower edge of the band is secured a larger-than-normal distance from the upper edge of each of the bust cups, thereby forming a reinforcement band which distributes upper-bust edge pressure over a greater-than-nor-

mal area. Additionally, the reinforcement band is comparatively flat and relatively undetectable when worn under garments which would reveal a normal reinforcement band on a conventional brassiere.

3,779,251

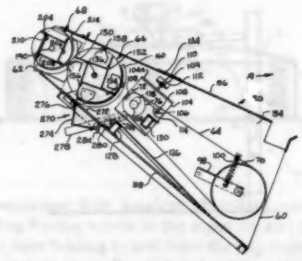
CROP ELEVATOR FOR A COMBINE

Edward William Rowland-Hill, Lancaster, and Edwin O. Margerum, Paradise, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 20, 1971, Ser. No. 181,913

Int. Cl. A01f *12/10*

U.S. Cl. 130—27 JT **8 Claims**



A combine crop elevator delivers to the intake of a combine a rapidly moving thin mat of crop material clear of stones and other debris. The crop material is progressively increased in speed by a chain type of conveyor receiving the crop material from a header, a following transverse intermediate bladed beater and a transverse rear discharge bladed beater. The crop material is cleared by the cooperative interrelation of the intermediate beater and a stone trap positioned underneath the forward portion of the intermediate beater to collect stones, debris and the like deflected downward by the intermediate beater as it sweeps the crop material rearwardly.

3,779,252

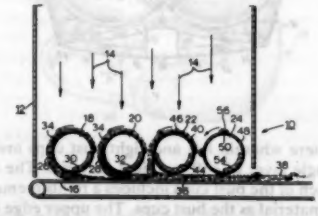
TOBACCO STREAM MANUFACTURE

Warren A. Brackmann, Cooksville, Ontario, and Daniel Di Ianni, Toronto, Ontario, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 128,412, March 26, 1971, abandoned. This application Sept. 3, 1971, Ser. No. 177,740

Int. Cl. A24c *5/18*

U.S. Cl. 131—84 B **4 Claims**



A tobacco manipulating apparatus for formation of a tobacco filler rod for use in the formation of cigarettes includes a relatively thin and flat chute, a tobacco particle gatherer located adjacent the discharge of the chute and a relatively flat elongated conveyor to receive tobacco from the gatherer. The gatherer includes a plurality of rotatable discs mounted across the width of the chute and each having substantially the same diameter and including a tobacco receiving peripheral surface in the plane of the chute. A source of vacuum is connected to each disc and vacuum interrupter is provided to prevent the application of vacuum over part of the surface of each disc. In this way a plurality of narrow substreams is formed from a broad stream of such particles in the chute. The narrow substreams are deposited sequentially and tangentially of the discs into the filler rod on the conveyor, the discs being mounted so that a straight line through their axes of rotation is inclined in a downstream direction with respect to the conveyor.

3,779,253

CIGARETTES

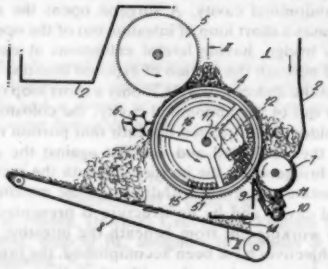
Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, assignor to Molins Machine Company Limited, Deptford, London, England

Filed Sept. 6, 1968, Ser. No. 757,890

Claims priority, application Great Britain, Sept. 15, 1967, 42,270/67

Int. Cl. A24c *05/39*

U.S. Cl. 131—110 **6 Claims**



In tobacco feeding apparatus in a cigarette making machine, "shorts" are collected from the tobacco supply and are mixed by tumbling in a hollow rotating member such as a drum forming part of a cigarette-making machine, e.g. a main feed drum, a refuser drum, or a shorts return drum. In one embodiment shorts are fed into rotating annular sieves one within the other and mounted in a rotating drum, so that the shorts are graded as well as mixed. The mixed shorts are later incorporated in the tobacco filler.

3,779,254

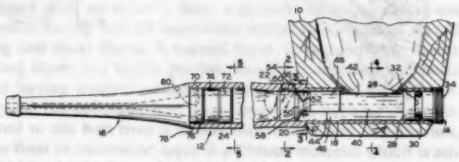
SMOKER'S PIPE

John R. Linskey, Rt. 1, Box 174, Hillsboro, Oreg.

Continuation-in-part of Ser. No. 39,000, May 20, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,316

Int. Cl. A24f *05/04*

U.S. Cl. 131—198 R **14 Claims**



An aluminum pipe stem has an air jet opening in the upper portion thereof adjacent a smoke passing orifice formed in the

upper portion of the stem by a baffle blocking the lower portion of the stem, and turbulates and dilutes the smoke flowing through the orifice. The baffle forms the rear end of a front inserted pin which guides the smoke from the bowl downwardly to the bottom portion of the stem and then upwardly to the outlet orifice. A bit has an insert having two lands having a friction or interference fit within the stem with an annular groove between the lands to permit flow of material of the bit as the interference fit is effected.

3,779,255

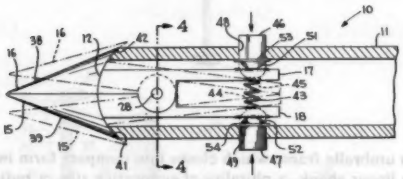
HAIR CURLING IMPLEMENT

Irene Theodorides, 193 rue du Jardin-Public, Bordeaux, France

Continuation of Ser. No. 117,800, Sept. 3, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 313,635

Int. Cl. A45d *2/26*

U.S. Cl. 132—41 A **3 Claims**



An implement for the curling of hair including a hollow handle member, relatively movable jaw members having clamping jaws forming a smooth extension outwardly of the handle and leg members thereof located within the handle, spring means biasing the clamping jaws into a clamping position, and press buttons on the handle cooperating with the leg members for opening the clamping jaws.

3,779,256

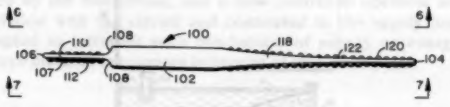
ORAL HYGIENIC DEVICE

Albert L. Maloney, and Holly H. Maloney, both of 3806 Inlet Isle, Corona Del Mar, Calif.

Filed Oct. 20, 1971, Ser. No. 190,925

Int. Cl. A61c *15/00*

U.S. Cl. 132—93 **11 Claims**



An oral hygienic device comprising an elongated member having a tapered rounded end capable of being inserted within the spaces between a user's teeth, with a hook at the opposite end thereof having sufficient space for receiving a length of dental floss. The tapered end has a blade or reduced edge for scraping food debris, bacterial plaque and residue from a user's teeth. The intermediate section of the device is relieved with stippling or cross-hatching on either or both sides to provide a roughened portion capable of gently abrading extraneous material on and between a user's teeth.

A second embodiment comprises an elongated device having a pointed end and a tapered portion internally bevelled or curved to provide a hollow terminating in an edge, with a handle at the distal end thereof having a relieved portion for gripping ease. The second embodiment also has stippling along the blade which serves to remove food debris, bacterial plaque and residue from a user's teeth.

3,779,257

COIN MAGAZINE

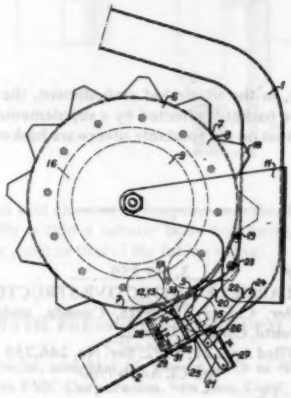
Claude Wenger, Geneva, Switzerland, assignor to Sodeca Societe des Compteurs de Geneve S.A., Geneva, Switzerland

Filed Aug. 19, 1971, Ser. No. 173,214

Claims priority, application Switzerland, Aug. 24, 1970, 12602/70

Int. Cl. G07d *1/00*

U.S. Cl. 133—5 R **4 Claims**



A coin magazine comprises an annular chamber defined between a fixed outer cylindrical wall and an helical track cut in a fixed coaxial inner cylinder. A rotatable coaxial end flange has regularly spaced fingers extending through said chamber parallel to and equally spaced from the common axis. Pusher means operating in synchronization with rotation of the flange introduce coins into the chamber through a slot in said wall to a position between pairs of adjacent fingers which serve to propel the coins along the track. By rotating the flange in the opposite direction, coins in the chamber are restituted via said slot.

3,779,258

ROTATING SILVERWARE BASKET FOR DISHWASHER

Robert A. Brenner, St. Joseph, and Victor W. Cuthbert, Sodus, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

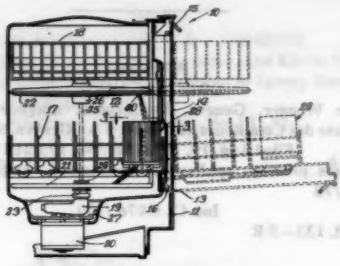
Filed Feb. 11, 1972, Ser. No. 225,503

Int. Cl. B08b *3/02*

U.S. Cl. 134—138 **8 Claims**

A dishwasher having a holder for holding silverware to be washed rotatably mounted on a dish holding rack in the washing chamber. The silverware basket is rotated on the dish holding rack so as to permit subjecting silverware carried thereby to a spray of washing liquid, with the spray striking the silverware in different angular positions as the silverware basket revolves. The spray itself may have movement relative

to the dish holding rack and silverware holding basket, and in the illustrated embodiment is provided by a rotating spray



arm. Further, in the illustrated embodiment, the rotation of the silverware basket is effected by a supplemental spray acting against vanes on the rotatable silverware basket.

3,779,259

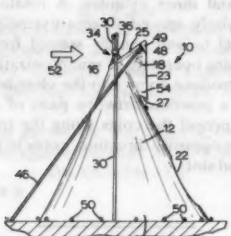
COLLAPSIBLE PROTECTIVE STRUCTURE

John G. Fuller, Calgary, Alberta, Canada, assignor to Ian Tyson, Toronto, Ontario, Canada

Filed Apr. 21, 1972, Ser. No. 246,255

Int. Cl. A45b *1/00*

U.S. Cl. 135—1 C **7 Claims**



This invention provides a tent structure essentially cone-shaped, including a flue opening in one side adjacent the peak. Two flexible smoke flaps are aligned vertically along the lateral edges of the flue opening. Two truss poles extend from the ground on opposite sides of the tent to a location above the peak, and the peak of the tent is slung from the point where the truss poles meet. Two flap poles extend upwardly from the ground on the side opposite the flue opening, each flap pole crossing one of the truss poles externally and being attached to one of the smoke flaps, in order to maintain the flaps taut in a desired orientation.

3,779,260

UMBRELLA FRAME

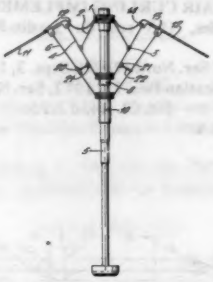
Fernando Creixell Garay, Onate, Spain, assignor to Hijos De Juan De Garay S.A., Onate, Spain

Filed July 17, 1972, Ser. No. 272,525

Claims priority, application Spain, July 30, 1971, 393,795; Aug. 3, 1971, 393,861; Sept. 18, 1971, 395,201; Dec. 7, 1971, 397,734

Int. Cl. A45b *19/00*

U.S. Cl. 135—20 R **5 Claims**



An umbrella frame which closes into compact form including a linear shank, a plurality of supporting ribs, a radial assembly connecting each supporting rib to first and second bushings slidably mounted on the linear shank. A weather-resistant fabric mounted on the umbrella frame is connected to and supported by the supporting ribs and fixed to the top end of the linear shank at a central portion thereof. From the normal closed position the second sliding bushing may be telescoped upwardly along the linear shank to displace the radial assemblies in the frame and urge the supporting ribs into an open position.

3,779,261

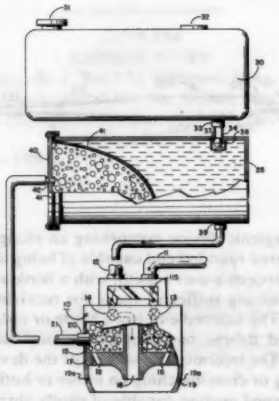
METHOD AND APPARATUS FOR MIXING FLUIDS

Alfred E. Zygiel, 3623 Parader Ct., Dallas, Tex.

Filed Mar. 10, 1972, Ser. No. 233,513

Int. Cl. 137 *564.5*; **G05d** *11/02*

U.S. Cl. 137—3 **11 Claims**



Disclosed is fluid mixing apparatus employing a metering chamber divided by a flexible diaphragm. Two fluids are

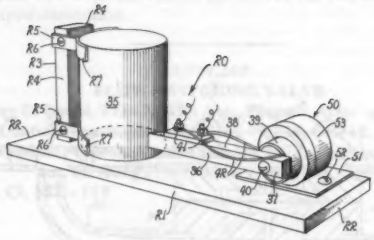
simultaneously injected into a mixing nozzle. The ratio of fluids is controlled by a feedback line which translates pressure from the first fluid outlet to the second fluid and thereby maintains a relatively constant ratio between the head pressures on the two fluids.

3,779,262

SEISMICALLY SENSITIVE SAFETY DEVICE

John C. Manning, and Mark T. Manning, both of 2512 Spruce St., Bakersfield, Calif.

Filed Jan. 12, 1972, Ser. No. 217,189
Int. Cl. F16k *17/36*
U.S. Cl. 137—38 **7 Claims**



A seismically sensitive safety device adapted for connection to a line for supplying fuel, electricity or other conductible energy or energy source material having a seismic sensor capable of perceiving seismic impulses of pre-selected magnitude, a mechanism for translating the perceived seismic impulses into an electrical impulse; an electrical circuit connected to the mechanism adapted to transmit the impulse supplied by the mechanism, and a flow control in operable association with the circuit and connected to the supply line adapted to interrupt such conduction of energy or energy source material in response to receipt of such an impulse.

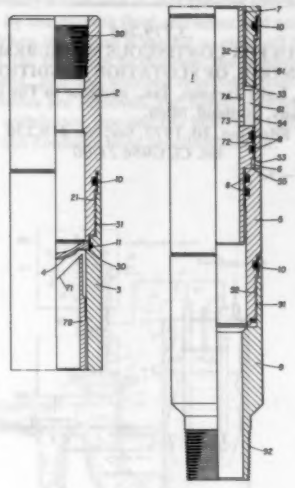
3,779,263

PRESSURE RESPONSIVE AUXILIARY DISC VALVE AND THE LIKE FOR WELL CLEANING, TESTING, AND OTHER OPERATIONS

Arnold Glen Edwards, and Charles J. Jenkins, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 9, 1972, Ser. No. 224,755
Int. Cl. F16k *13/04;* **E21b** *21/00*
U.S. Cl. 137—68 **5 Claims**

A full opening pressure operated disc valve particularly suited for cleaning formation perforations by surging and for other operations comprises a rupturable sealing element and a sliding tubular rupture member actuated by a controlled pressure differential between the tubing chamber and the casing annulus, with said element and rupture member being located concentrically within a tubular body and having an ID substantially the same as that of the tubing string.

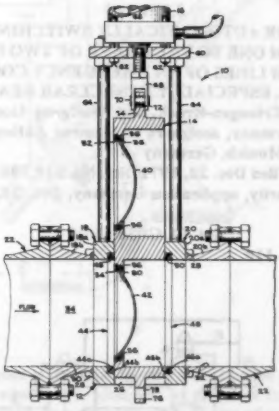


3,779,264

AUTOMATIC PRESSURE-RELIEF RUPTURE DISC CHANGER

Joseph R. Roche, and Mat M. Bowen, both of Houston, Tex., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 10, 1972, Ser. No. 296,493
Int. Cl. F16k *17/40*
U.S. Cl. 137—68 **6 Claims**



An automated apparatus for holding and changing pressure-relief rupture discs in a pipe line or other fluid conduit. The apparatus includes a gate-like disc carrier with a pair of apertures in each of which a rupture disc is secured, a housing or body in which the carrier is slidably disposed, and a pneumatic cylinder or similar operator connected to the carrier for mov-

ing the discs in and out of the line. When either one of the discs is in functional position in the line the other disc is accessible for replacement or servicing without need for line shutdown or apparatus disassembly.

3,779,265

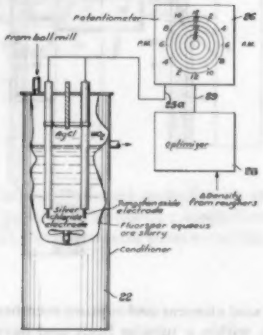
APPARATUS FOR CONTINUOUS MEASUREMENT AND CONTROL OF FLOTATION CONDITIONS

Porter Hart, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 20, 1972, Ser. No. 219,230

Int. Cl. G05d *21/00*

U.S. Cl. 137—93 **3 Claims**



A method and apparatus necessary to carry out the method of continuous measurement, recordation, and correction of the varying electrode potential or E.M.F. within an ore slurry containing conditioning components in a mineral flotation system by immersing in cooperative relationship a tungsten oxide electrode and a silver chloride electrode in the slurry, relaying the potential thereby obtained to a recording instrument or to an optimizer or to both and either manually, or automatically by means of the optimizer, adjusting the rate of feed of at least one conditioning component of the slurry to correct the potential or E.M.F. to provide a more efficient process.

3,779,266

DEVICE FOR AUTOMATICALLY SWITCHING A FEED FLOW FROM ONE TO THE OTHER OF TWO PARALLEL BRANCH LINES OF AN EMERGENCY COOLING SYSTEM, ESPECIALLY IN NUCLEAR REACTORS

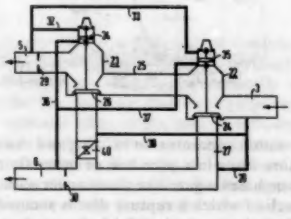
Hans Fruth, Erlangen-Bruck, and Wolfgang Godel, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 22, 1971, Ser. No. 210,780

Claims priority, application Germany, Dec. 24, 1970, P 20 63 674.2

Int. Cl. G05d *11/00*

U.S. Cl. 137—110 **6 Claims**



Device for automatically switching a feed flow from one to the other of two parallel lines branching from a feed line when a break occurs in one of the branch lines, includes a piston-controlled three-way valve situated at a location of the feed line at which the branch lines branch off, the three-way valve having an inlet connected to the feed line and a respective outlet connected to each of the branch lines, the three-way valve having a valve member normally closing one of the outlets and being operatively connected to a displaceable piston and actuable thereby for opening the normally closed outlet and closing the other of the outlets, a fixed throttle disposed in each of the outlets, a first pressure line connected between one side of the piston and the branch line connected to the normally closed outlet at a location thereof downstream of the fixed throttle in the normally closed outlet, and a second pressure line connected between the other side of the piston and the branch line connected to the other outlet at a location thereof downstream of the fixed throttle in the other outlet.

3,779,267

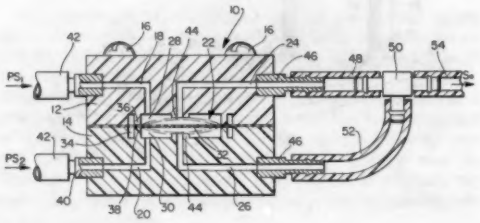
FLUID OPERATED LOGIC DEVICE

Larry Clyde Cowan, Jamestown, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed July 26, 1971, Ser. No. 165,446

Int. Cl. F15c *3/04*

U.S. Cl. 137—111 **1 Claim**



Fluid operated logic device providing a positive going OR or a negative going AND signal is disclosed. Input signals are provided via fluid moving in first and second circuits or fluid flow paths which pass through a common chamber. The chamber incorporates a fluid impervious flexible diaphragm which isolates the first and second circuits or flow paths within the chamber. The diaphragm is movable in response to fluid movement through one of the first and second flow paths to block the other flow path through the chamber, thereby precluding fluid movement from the inlet to the outlet opening of the other flow path and also preventing feedback of one input signal into the other circuit. The device is passive, operating on signal power alone.

3,779,268

AUTOMATIC CHANGEOVER VALVE FOR CHLORINE GAS SYSTEM

William Collins Conkling, Essex Fells, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

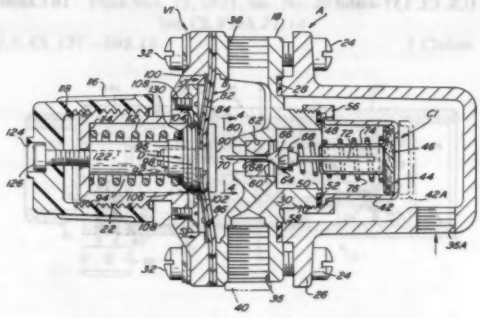
Filed June 13, 1972, Ser. No. 262,385

Int. Cl. G05d *7/01*

U.S. Cl. 137—113 **7 Claims**

An automatic changeover diaphragm valve for chlorine gas service incorporates a loading spring on the atmospheric side of the diaphragm in order to provide a regulated positive pressure discharge. A latching mechanism for the valve employs spaced parallel rods which engage a V-groove on the loading spring spool to hold the valve in standby condition prior to release for changeover operation. The diaphragm includes a tetrafluorethylene web on the gas side and a chlorosulfonated

web on the atmospheric side clamped at the outer peripheries. A sectored metal disk is used to abut against the chlorosulfonated web while the central portions of the two webs are in clamped disposition.



3,779,269

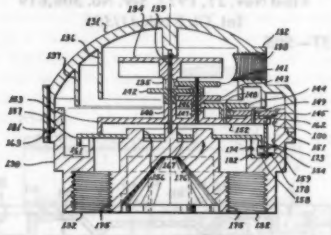
FLOW SWITCHING VALVE

Henry D. Gould, 7734 N. 41st Ave., Phoenix, Ariz.

Continuation-in-part of Ser. No. 79,724, Oct. 12, 1970, abandoned. This application Jan. 20, 1972, Ser. No. 219,224

Int. Cl. A01g *25/00*; B05b *9/00*; F16k *21/00*

U.S. Cl. 137—119 **12 Claims**



A fluid flow valve is disclosed for sequentially switching an incoming fluid stream through each of a plurality of outlet ports. An impeller is disposed for angular rotation within the valve and turns in response to the flow of fluid. The impeller is connected to a rotor by means of a planetary gear train. The rotor operates a cam which opens one segment of a multi-segmented plate associated with the outlet ports, thereby allowing fluid flow through the selected outlet ports.

3,779,270

SPHERE LAUNCHER AND RECEIVER

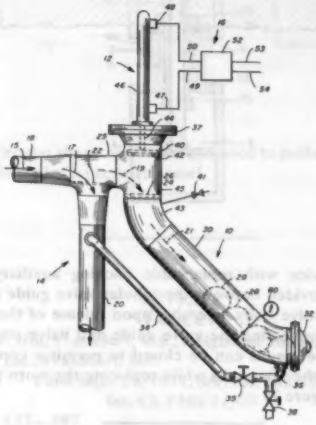
Billy E. Davis, Tulsa, Okla., assignor to Signet Controls, Inc., Tulsa, Okla.

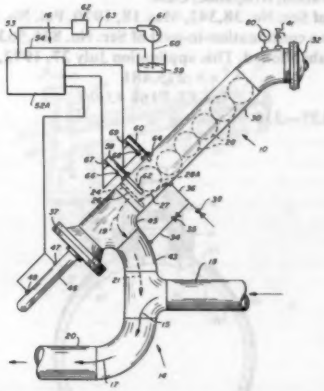
Filed May 26, 1972, Ser. No. 257,144

Int. Cl. B08b *9/04*

U.S. Cl. 137—268 **7 Claims**

This invention describes an improved method of launching spheres into a flowing fluid pipeline and for receiving spheres that have been traveling with the fluid in the pipeline. It comprises in general a barrel which is attached at one end to an opening into the flow line of the pipeline and is closed at the other end by a removable closure. Inside the flow line is a piston means which is adapted to close and seal across the end of the barrel near the point of attachment to the flow line. This piston is normally withdrawn so that spheres which are carried to this point by the moving fluid will enter and accumulate in the barrel. When the piston is moved to close off the first end of the barrel, the fluid can be drained, the removable closure can be opened, and the spheres removed from the barrel. After the spheres are removed, the barrel is repressured and the piston is withdrawn, opening the input end of the barrel so that spheres can continue to be received therein.





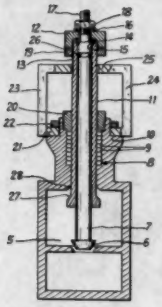
The launcher is a similar type of barrel with a piston closure at the end where it is attached to the flow line. While the receiver is tilted downward from the point of attachment, the launcher is tilted upward, so that after spheres are put into the barrel, they can be launched by being dropped down into the flow line. Hydraulically operated plungers are provided which move through the wall of the barrel at its lower end and serve to restrain the downward movement of the spheres. Simply withdrawing the lower of the two plungers will cause one of the spheres to be launched into the flow line.

3,779,271

VALVES WITH REPLACEABLE PACKING

Jean Marcel Legrandgerard, Chenneviers-sur-Marne, France, assignor to ADAR, Hauts-de-Seine, France

Filed Mar. 21, 1972, Ser. No. 236,731
Claims priority, application France, Mar. 29, 1971, 7110912
Int. Cl. F16k 41/02
U.S. Cl. 137—315 1 Claim



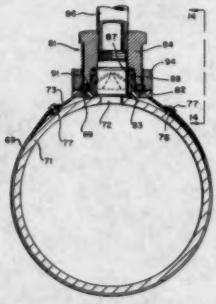
In this device with replaceable packing auxiliary valve means are provided between the tubular valve guide and the surrounding valve body whereby, upon release of the means rigidly interconnecting the valve guide and valve stem, said auxiliary valve means can be closed to permit a continuous operation of the apparatus while replacing the worn packing elements. (Figure 2)

3,779,272

PIPE SADDLE ASSEMBLY

Paul G. Dunmire, Oakland, Calif., assignor to Johns-Manville Corporation, Arapahoe, Colo.

Division of Ser. No. 38,342, May 18, 1970, Pat. No. 3,687,480, which is a continuation-in-part of Ser. No. 826,563, May 21, 1969, abandoned. This application July 27, 1972, Ser. No. 275,481
Int. Cl. F16k 43/00
U.S. Cl. 137—315 4 Claims



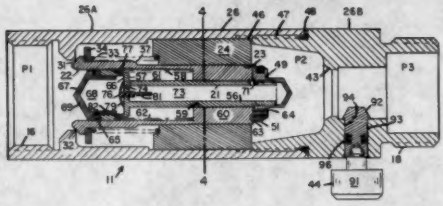
A pipe saddle assembly employing a flexible strap adapted to be disposed about a pipe into which a branch line is to be made. The saddle assembly includes lugs cooperating with the ends of the band and bolts for drawing the lugs together to tension the band. The bolts ride on fulcrums supported by a boss element to be drawn against the pipe. A seal ring interposed between the boss element and pipe seals against leakage.

3,779,273

SHUT OFF DEVICE

Allan V. Stone, 33 Summit Rd., Port Washington, N.Y., and Francis J. Martin, 5 Skyline Dr., Huntington, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,163
Int. Cl. F16k 17/12
U.S. Cl. 137—460 16 Claims



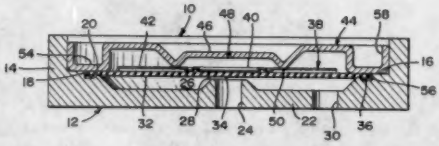
An automatic shut off device particularly designed to be positioned upstream of the flexible hose through which the feed water flows to a household automatic washing machine. The device operates if flow through it continues for longer than the usual water-demand period of the washing machine cycle. It includes means for establishing a pressure differential, whose magnitude is substantially independent of the flow rate over a wide range of flow rates, and shut off means responsive to the continuance of that differential.

3,779,274

PRESSURE REGULATOR

Samuel T. Kelly, Torrance, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 21, 1972, Ser. No. 308,619
Int. Cl. F16k 31/385
U.S. Cl. 137—505 15 Claims



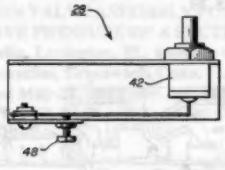
A pressure regulator including a housing having inlet and outlet ports and a valve seat communicating with the inlet port, a flexing member mounted in the housing to form a chamber therein and a cover press fitted in the housing to retain the flexing member and having an annular fulcrum engaging the flexing member, the flexing member being flexed at a ring disposed within the fulcrum to move a valve face portion of the flexing member toward and away from the valve seat to regulate outlet pressure. In one embodiment the flexing member includes a rubber diaphragm with a metal spring disc secured thereto, and in another embodiment the flexing member is a thin, flexible metal disc providing the functions of both spring and diaphragm.

3,779,275

ENVIRONMENTAL AIR DISTRIBUTION CONTROL SYSTEM POWERED BY SYSTEM PRESSURE

Ralph M. Ley; Harold M. Alyea, and Thomas H. Holloway, all of Waukesha, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 22, 1971, Ser. No. 201,006
Int. Cl. F16k *21/14*
U.S. Cl. 137—505.18 4 Claims



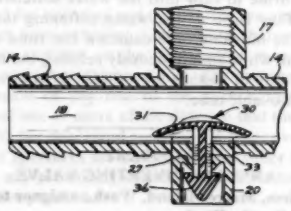
An environmental air distribution control system regulates the flow of air under pressure by using the system pressure itself to effect the desired control. This is accomplished by using one or more pressure regulating valves, each pressure regulating valve being adapted to selectively vary the pressure drop across its output impedance to thereby control the rate of flow of air.

3,779,276

DRAINAGE VALVE STRUCTURE

Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn.

Filed June 9, 1972, Ser. No. 261,276
Int. Cl. F16k *15/14*
U.S. Cl. 137—512.4 1 Claim



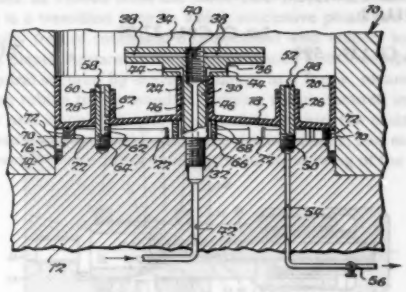
A drainage valve structure in connection with a water line of an underground watering system comprising a nipple having an upper and a lower valve seat and corresponding upper and lower valves, said upper valve seating under normal water pressure in said water line and opening said valve automatically under a lesser water pressure and said lower valve seating to close said valve responsive to the pressure of subsurface water to prevent its entrance into said water line.

3,779,277

ANTI-DIRT SLEEVE FOR ISOSTATIC PRESS

Eduard L. J. Papen, Belsele, Belgium, assignor to National Forge Company, Irvine, Pa.

Filed Feb. 29, 1972, Ser. No. 230,306
Int. Cl. F16j *15/48*; B29c *3/04*
U.S. Cl. 137—592 8 Claims



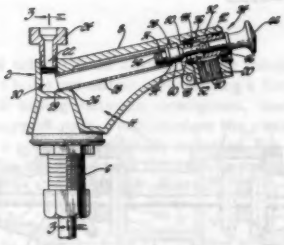
A disc of elastomeric material to catch falling particles and prevent them from abrading the bottom seal of a pressure vessel. The disc has an outer edge which is turned up to form a pan of circular shape and is dimensioned to make a close fit to the inside wall of a pressure vessel.

3,779,278

FAUCET

Larry M. Hill, Frankfort, Ind., assignor to Indiana Brass Company, Inc., Frankfort, Ind.

Filed Sept. 21, 1971, Ser. No. 182,438
Int. Cl. F16k *11/00*
U.S. Cl. 137—597 14 Claims



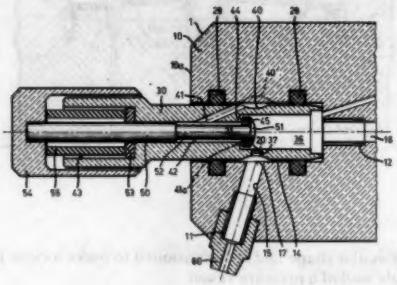
A faucet including a housing having hot and cold water inlets and a spout portion. A first outlet is formed in the spout portion for directing water from the faucet to a sink or lavatory, and a second outlet is formed in the housing at a position remote from the first outlet for directing the water to a tub or shower. A diverter tube has one end supported in the housing and communicating with the second outlet with its other end spaced from the first outlet. A diverter valve recess is formed in the spout and a diverter valve assembly is mounted in the recess for controlling communication between the hot and cold water inlets and either the diverter tube or the first outlet so that actuation of the diverter valve determines whether or not water flows from the first or second outlets.

3,779,279

CONDUCTIVITY MEASURING CELL

Kurt Schon, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Oct. 27, 1972, Ser. No. 301,646
Claims priority, application Switzerland, Nov. 12, 1971, 16511/71
Int. Cl. G01n 27/00
U.S. Cl. 137—599 7 Claims



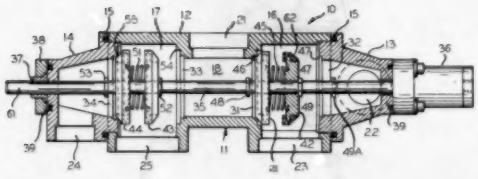
A conductivity measuring cell for a counting apparatus for counting particles suspended in a fluid medium incorporating a suction channel communicating with a withdrawal channel by means of a calibrated bore serving as an electrical resistance measuring path. The suction channel flow communicates with the withdrawal channel through the agency of an auxiliary branch channel arrangement equipped with a throughpassage which can be sealingly closed and opened.

3,779,280

CONTROL VALVE FOR CONTAMINANT-LADEN GASES

Arthur J. Evans, Northville, Mich., and Joseph C. Morin, New Westminister, British Colombia, Canada, assignors to Whitlock, Inc., Farmington, Mich.

Filed Aug. 17, 1972, Ser. No. 281,531
Int. Cl. F16k 11/00
U.S. Cl. 137—625.5 5 Claims



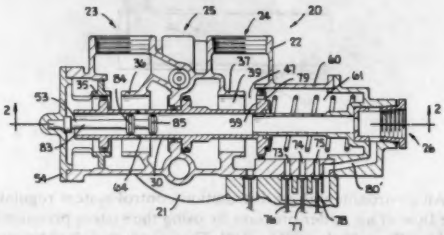
A control valve for directing the flow of gases which may contain substantial amounts of powder, granular material, or other contaminants, comprising a housing defining two transfer chambers; both chambers are connected to a central port and each chamber is connected to a separate intermediate port and to an end port. An actuator rod extending through both transfer chambers carries two pair of poppets, one pair in each transfer chamber. The poppets in each pair are slidably mounted on the rod, back-to-back, and each pair is biased away from the other poppet in the pair, toward a retainer mounted on the rod, by a spring interposed between the poppets. Each poppet is face with a frusto-conical seal of moderately soft elastomer that engages a relatively sharp valve seat in line contact to seal off one of the transfer chambers from the central port or from one of the end ports, the valve being actuated by axial movement of the actuator rod.

3,779,281

WATER SOFTENER VALVE ASSEMBLY WITH REGENERATION CAPABILITY

Earl P. Brane, Largo, Fla., assignor to Laurtech International Company, Racine, Wis.

Filed Sept. 18, 1972, Ser. No. 290,233
Int. Cl. B01d 29/38
U.S. Cl. 137—625.29 7 Claims



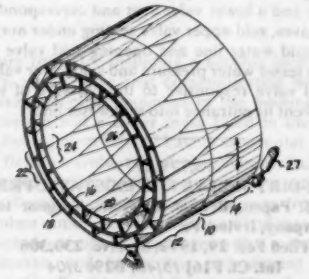
A valve assembly for a water softener which is capable of regenerating the water softening material within the tank. The assembly has a housing including a plurality of passages and chambers through which a tube is slidably movable. A plurality of seals are mounted to the tube and are sealingly engageable with various passages to direct the fluid in the desired directions. One position of the movable tube forces the incoming water to flow through the water softener tank and then out through the soft water outlet. A second position of the movable tube causes the hard water flowing in the inlet of the assembly to flow immediately out of the assembly through the soft water outlet. In addition, the hard water is caused to flow in a reverse direction through the water softening tank thereby providing a backwash with the drain water exiting the assembly through a drain exit. A third position of the movable tube causes brine to flow into the water softener tank and a subsequent flow rinse of the water softening tank. The last position of the movable tube causes a fast rinse of the water softening tank while simultaneously refilling the brine storage tank. A plurality of pistons are utilized to control the movement of the movable tube.

3,779,282

ANNULUS INVERTING VALVE

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 8, 1971, Ser. No. 196,422
Int. Cl. F16k 11/06
U.S. Cl. 137—625.46 23 Claims



A flow control system for inverting the positions of two adjacent constant area flow patterns within the confines of a

fluid passageway having an area substantially equal to the combined area of the two separated flow patterns. The preferred embodiments involve annular first and second duct means divided into duct elements shaped and arranged such that two annular flow patterns are discharged at the exit end of the passageway in an inverted adjacent concentric relationship to that which exists at the entrance end of the passageway. Valve embodiments for optionally causing either inverted or straight through flow are also presented.

3,779,283

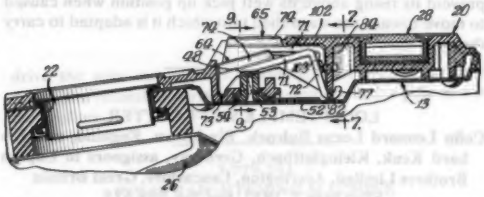
PUSH BUTTON VALVE ASSEMBLY FOR ADJUSTING THE NEGATIVE PRESSURE OF A SUCTION CLEANER

Samuel E. Hohulin, Lexington, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.

Filed May 28, 1971, Ser. No. 147,809

Int. Cl. F16k *11/22*; A47l *9/00*

U.S. Cl. 137—637 **16 Claims**



A push button valve assembly is disclosed for adjusting the negative pressure developed in the casing and hence at the suction inlet of a canister-type suction cleaner. The valve assembly includes a plurality of different size apertures in the casing, which communicate with the negative pressure zone therein and which permit different bypass flows of air to be established from the exterior of the cleaner to the negative pressure zone. Such different bypass flows serve to control the suction at the suction inlet of the cleaner. A plurality of slides are provided for covering and uncovering the apertures, and a series of push buttons having cam surfaces thereon engageable with reaction surfaces on the slides, effect movement of the slides with respect to the apertures. The arrangement is such that depression of any one of the push buttons will cause movement of one or more of the slides so that the aperture associated with the depressed push button is uncovered while all of the other apertures are covered by the other slides. At the same time, any previously depressed push button is raised to an inoperative position.

3,779,284

SHIRRED CASING STICK WITH REVERSE HELICAL FOLD PATTERN

Valdis M. Tums, Palos Park, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 6, 1971, Ser. No. 159,858

Int. Cl. A22c *13/00*

U.S. Cl. 138—118.1 **3 Claims**

A shirred stick of sausage casing has a plurality of repetitive zones endrto-end. In one zone each successive pleat is axially and rotationally displaced from its preceding neighbor in a direction counter clockwise to the longitudinal axis of the stick as viewed from one end. In another zone each successive pleat is axially and rotationally displaced from its preceding neighbor in a direction clockwise to the longitudinal axis of the stick as viewed from the same end. In between the two zones is a transition zone in which successive pleats are substantially free of rotational displacement with respect to adjacent pleats. Apparatus for producing such a stick comprises a mandrel secured by movable clamps to a frame, means for feeding tubing to the mandrel, shirring means secured to the frame and associated with the mandrel to shirr the casing, a holdback mounted adjacent to the driving means, and means for reversibly rotating the holdback during shirring of the tubing.

3,779,285

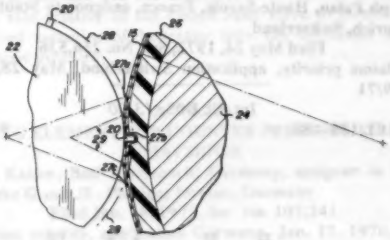
METHOD FOR OBTAINING PERFORATED TUBULAR FOOD CASINGS

Armando J. Sinibaldo, Brookfield, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 1, 1969, Ser. No. 821,040

Int. Cl. A22c *13/00*

U.S. Cl. 138—118.1 **4 Claims**



Perforated tubular food casings having substantially free-draining vent holes are obtained by passing a flattened web of tubular food casing between contiguous, counter-rotating punch and support rolls. Positioned on the circumference of one roll are a plurality of radially mounted, flat-faced, sharp-edged punches adapted to cut through the casing and indent a resilient support surface on the other roll.

3,779,286

METHOD AND APPARATUS FOR WEAVING TERRY CLOTH

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Oct. 2, 1972, Ser. No. 294,207

Claims priority, application Switzerland, Oct. 11, 1971, 140801/71

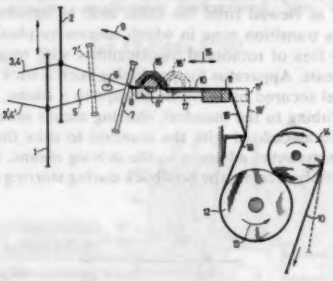
Int. Cl. D03d *39/22*

U.S. Cl. 139—25 **10 Claims**

The terry cloth weaving machine is provided with a means to vary the length of cloth travel downstream of the temples so as to maintain the fell straight.

In one embodiment, a deflecting element is positioned between the breast beam and draw-off roller to deflect the

cloth out of its normal path during reciprocation of the breast beam. In another embodiment, a vertically-reciprocal roller is



mounted between the temples and breast beam to deflect the cloth.

3,779,287

CONNECTION BETWEEN FRAME AND POWER TRANSMITTING ROD OF A SHED-FORMING MACHINE

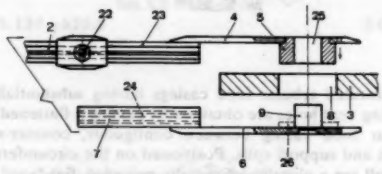
Joseph Palau, Haute-Savoie, France, assignor to Staubli Ltd., Zurich, Switzerland

Filed May 24, 1972, Ser. No. 256,536

Claims priority, application Switzerland, May 28, 1971, 7839/71

Int. Cl. D03c *13/00*

U.S. Cl. 139—88 **9 Claims**



Connecting rod connection, especially for use with heddle frames. A connecting rod is provided for connecting to an opening in a heddle frame by having a pair of plates forming a yoke and projecting beyond the end of a connecting rod and, when in operative position, projecting to a point adjacent a connecting point for the heddle frame. A sleeve is affixed to one side of the yoke and projects toward the other thereof while a pin is affixed to said latter-named side, is positioned coaxially with said sleeve and projects toward the first-named side. The heddle frame is provided with an opening snugly but pivotally received over the external diameter of said sleeve, each of said sides are provided with alignment means such as serrations by which they are properly related to the connecting rod to be in accurate alignment with each other for coaxial reception of said pin into the internal diameter of said sleeve. Clamp means clamp said sides against the connecting rod and into the heddle frame.

3,779,288

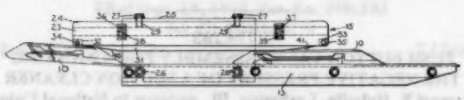
WEFT CARRIER GUIDE

Edward S. Budzyna, East Douglas, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 14, 1972, Ser. No. 262,515

Int. Cl. D03d *47/12*

U.S. Cl. 139—122 R **3 Claims**



A weft carrier guide for the inserting carrier of a shuttleless loom of the gripper type for guiding the carrier to and to prevent its rising above its weft pick up position when caused to move toward the warp shed into which it is adapted to carry the weft.

3,779,289

LOOM TEMPLE WEFT CUTTER

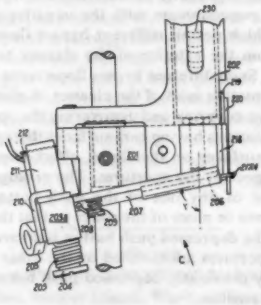
Colin Leonard Lucas Bulcock, Blackburn, England, and Erhard Kenk, Kleinglattbach, Germany, assignors to Lupton Brothers Limited, Accrington, Lancashire, Great Britain

Filed May 2, 1972, Ser. No. 249,625

Claims priority, application Great Britain, Feb. 8, 1972, 5,700/72

Int. Cl. D03d *45/50*

U.S. Cl. 139—266 **6 Claims**



A loom temple including a weft cut-off device operable by a lever which, in synchronism with a loom sley, moves rectilinearly to move the cut-off device towards a weft to be cut and thereafter pivots to operate cut-off device shears and sever the weft to be cut.

3,779,290

APPARATUS FOR UNTWISTING AND STRIPPING TWISTED WIRE PAIR LEADS

Dennis E. Rich, Phoenix, and Robert O. Crump, Scottsdale, both of Ariz., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

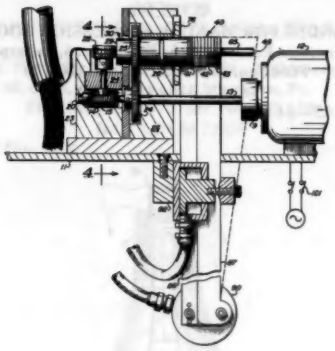
Filed Sept. 28, 1972, Ser. No. 293,291

Int. Cl. B21f *21/00*

U.S. Cl. 140—1 **4 Claims**

A rotatable wire guiding assembly is provided which at one end receives a twisted wire pair fed thereto and at the other end fits with a grooved conical separator element that has a

saddle shaped tip. Attached to the wire guiding assembly is a cutter-stripper assembly which includes an insulation cutter and a set of plates that grip insulation for stripping. Actuators



drive the wire cutting and stripping elements and a motor drives the rotatable wire guiding assembly and a pair of wire feed rollers.

3,779,291

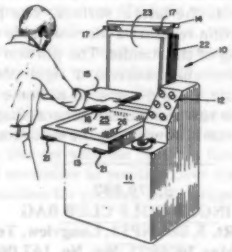
PIN STRAIGHTENING MACHINE

Herbert G. Yeo, Lincoln, R.I., assignor to Augat, Inc., Attleboro, Mass.

Filed May 11, 1972, Ser. No. 252,489

Int. Cl. B21f *1/02*

U.S. Cl. 140—147 **13 Claims**



A machine for straightening the pins secured to a multiple pin board. The pins are simultaneously inserted through holes in a plate which is movable with respect to the pin board. Through an arrangement of gears which provide the relative motion between the plate and the pin board, this motion is carefully timed and controlled as to the amount, direction and sequence of relative motion imparted. All of the pins on the pin board are acted upon simultaneously so that at the end of the operation any axial deformity of any of the pins is corrected and all of the pins stand parallel to each other and perpendicular to the plane of the pin board.

3,779,292

CARBONATED BEVERAGE FILLER

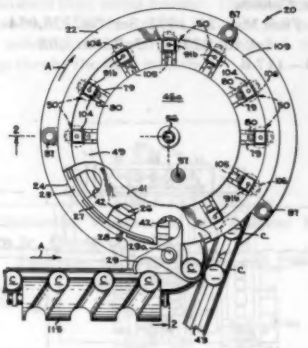
Samuel A. Mencacci, Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 17, 1972, Ser. No. 235,516

Int. Cl. B65b *3/04*

U.S. Cl. 141—11 **22 Claims**

A filling apparatus for carbonated beverages including a filling valve connected to a beverage source under pressure and including a measuring cylinder movable into and out of a container to be filled. The measuring cylinder has a foot valve on its lower end and is telescopically associated with an inlet valve. The measuring cylinder is filled with a predetermined amount of beverage at superatmospheric pressure by moving the cylinder down into an empty container when the foot valve is closed and the inlet valve is open. The inlet valve is then



closed and the cylinder is again moved down a slight amount to increase the volume thus reducing the pressure of a measured volume of beverage to atmospheric pressure. The foot valve is then opened and the measuring cylinder is moved upwardly at one rate and the container is moved upwardly at a slower rate relative to the closed inlet valve to transfer the measured quantity of beverage into the container at atmospheric pressure.

3,779,293

FILLING ELEMENT FOR COUNTER PRESSURE FILLING MACHINES

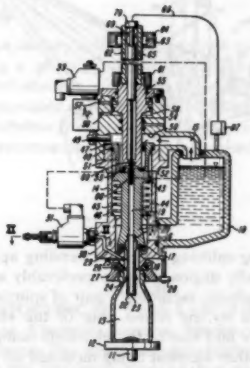
Klaus Kaiser, Bad Kreuznach, Germany, assignor to Seitz-Werke G.m.b.H., Planiger Strauss, Germany

Filed Jan. 18, 1971, Ser. No. 107,241

Claims priority, application Germany, Jan. 17, 1970, P 20 02 060.4

Int. Cl. B65b *31/06*

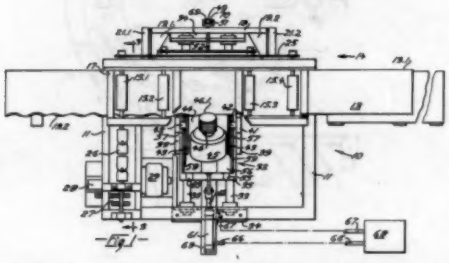
U.S. Cl. 141—39 **4 Claims**



A filling structure free from filling pipe means for counter pressure filling machines. A gas conduit extends coaxially from a tubular fluid discharge opening into a pressed-on vessel to be filled with liquid. The gas conduit has an opening for discharging the tension gas and limiting the drop height. The

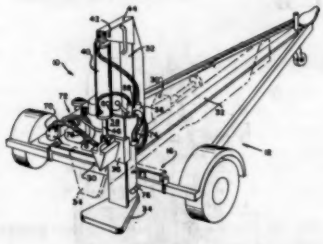
gas conduit is equipped with an electric control adapted to be influenced by the substance to be filled in for releasing a closing pulse for a liquid control valve.

3,779,294
BOARD EDGING MACHINE
William Warren Gillis, Burnaby, British Columbia, Canada, assignor to Mill and Timber Products Ltd., Burnaby, British Columbia, Canada
Filed Mar. 27, 1972, Ser. No. 238,054
Int. Cl. B27c *5/02*; B27m *3/08*
U.S. Cl. 144—117 B **3 Claims**



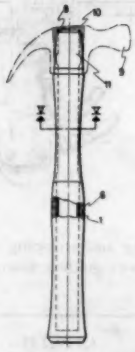
A board edge trimming machine having a rotating cutter which is mounted for rocking movement on a sliding carriage and controls for independently controlling rocking movement of the cutter and movement of the carriage so as to provide a board with a wavy, variably-bevelled edge.

3,779,295
LOG SPLITTER AND TUBE BENDER
Paul H. Balsbaugh, 935 Baker Dr., Ripon, Calif.
Filed Oct. 14, 1971, Ser. No. 189,161
Int. Cl. B27l *7/00*
U.S. Cl. 144—193 A **7 Claims**



A portable log-splitting and tube bending apparatus comprising a vertically disposed frame preferably adapted to be mounted on a vehicle, including a pair of splitting or bending elements carried by the frame, one of the elements being generally convex and one of the elements being fixed to the frame and the other element being mounted on the frame for reciprocating movement along the frame toward and away from the other splitting or bending element. When being utilized as a log splitter, one of the splitting elements is a relatively flat log-abutting member disposed normally to the frame and the other splitting element is a wedge-shaped blade having a leading edge at an oblique angle relative to the face of the flat log-abutting member. When being used as a tube bender, one of the bending elements is fixed to the frame and the other element is mounted on the frame for reciprocating movement along the frame toward and away from the other bending element.

3,779,296
HANDLE FOR MANUAL PERCUSSION TOOLS
Nicolas Guerrico Echeverria, Apartada No. 6, Legazpia, Spain
Filed Jan. 24, 1972, Ser. No. 220,120
Int. Cl. B25g *1/10, 3/28*
U.S. Cl. 145—61 H **9 Claims**



Handle for manual percussion tools having a metal tube covered with plastic cases of varying rigidity which affect different areas of the tube. The tube constitutes the core of the handle and has a preferably elliptic section with two coaxial portions of approximately the same length and different width and near the free end of the narrower portion there is a deformation which affects the lateral surface. The portion of the tube of greater section receives a dismountable casing shaped for manual gripping of the handle. The portion of the tube of lesser section immovably receives a rigid plastic covering preferably of acetate, having a graded extreme area of lesser dimensions than the rest and has the general shape of a rectangular truncated pyramid concealing the deformation.

3,779,297
HINGED GOLF CLUB BAG
John S. Stammer, Rt. 3, Box NP51, Longview, Tex.
Filed May 26, 1971, Ser. No. 147,068
Int. Cl. A63b *55/00*
U.S. Cl. 150—1.5 R **8 Claims**

A lightweight golf club bag having a pair of side arm members secured to a common cross member whereby at least one of the arms may be alternately pivoted in directions away from and toward the other arm to provide extended and contracted

positions for the bag. In the extended position of the bag the golf clubs may be efficiently stored or supported in a substantially upright position and in the contracted or closed position of the bag the clubs may be easily transported.

3,779,298
LIGHT WEIGHT DECORATIVE INSULATED BOTTLE CONTAINER

Francis J. Piccirilli, 611 W. Market St., Bethlehem, Pa., and Joseph M. Sabo, 163 Turner St., Allentown, Pa.

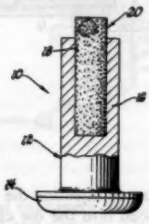
Filed May 12, 1972, Ser. No. 252,658
Int. Cl. B65d *23/08*
U.S. Cl. 150—52 R **5 Claims**

An inexpensive bottle container adapted for wine and like bottles of varying size comprising upper and lower open-ended matching enclosures of a light weight insulating material such as closed cell polyurethane, which enclosures are retained on the bottle by means of decorative upper and lower sleeves having elastic means disposed at the open ends of the respective enclosures, these elastic means circumscribing an opening of smaller area than that circumscribed by the open ends of the enclosures whereby the contact of the elastic means of the sleeves with the bottle is functional in retaining the insulated enclosure in position over the bottles, as well as in inverted position for packing and storage purposes.

3,779,299
TIRE STUD

Charles S. Baum, St. Clair Shores, Mich., assignor to Permanence Corporation, Detroit, Mich.

Filed May 15, 1970, Ser. No. 37,708
Int. Cl. B60c *11/16*
U.S. Cl. 152—210 **10 Claims**

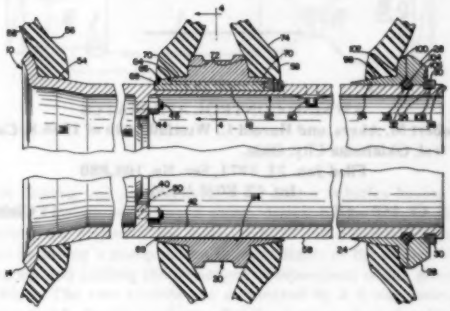


A tire stud and the method of making same. The tire stud includes an elongated metal body having a head at one end and a shank extending from the head with a cavity extending into the shank toward the head. In making the completed stud, the body is disposed in a bore having a shank receiving portion and a smaller portion which is generally of the same cross sectional area as the cavity and which extends upwardly from the cavity to an opening. Material is disposed through the opening to fill the cavity and at least a part of the smaller portion of the bore above the cavity. These materials include particles made of carbon grains sintered together by a binder such as cobalt and an additional filler metal powder. The filler metal powder is melted so as to fill the spaces between the particles and thereafter solidifies to form a composite of the particles bonded together by the filler material.

3,779,300
MULTIPLE TIRE RIM

Peter C. Stabovitz, Woodstock, Ill., assignor to Peter C. Stabovitz, Jr., Orangeburg, S.C.

Filed Apr. 19, 1971, Ser. No. 135,237
Int. Cl. B60c *5/00*
U.S. Cl. 152—376 **2 Claims**



A one-piece unitary substantially cylindrical rim is disclosed for mounting a plurality of concentric tires thereon. In a preferred embodiment, adjacent tires are sealed and supported by removable radially extending flanges on a separator ring. When tubeless tires are used, the adjacent tires are pneumatically interconnected in this preferred embodiment.

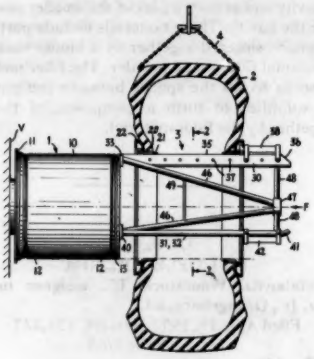
3,779,301
MOUNTING OF VERY LARGE TIRES

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-dome), France

Filed July 21, 1972, Ser. No. 273,721
Claims priority, application France, Aug. 2, 1971, 7128338
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.17 **6 Claims**

In order to facilitate mounting or removing a very large tire on or from a cylindrical rim, a slide beam is fastened at one

end to the rim edge in such a manner that the beam is included within a cylinder forming an extension of the base of the rim



and is tangent to such cylinder along a generatrix. Auxiliary beams are similarly mounted at intervals of 120° around the rim.

3,779,302

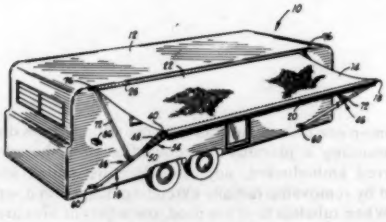
AWNING CONTROL APPARATUS

Robert M. Akers, and Harold L. Westfall, both of 1536 S. Central, Oklahoma City, Okla.

Filed Jan. 22, 1971, Ser. No. 108,880

Int. Cl. E04f *10/06*

U.S. Cl. 160—68 **11 Claims**



An improved awning control apparatus for connection to a support structure wherein the awning is secured to the support structure on one end thereof and to a shaft on the opposite end thereof. The shaft is rollingly supported by a support assembly, having a portion pivotally secured to the support structure and another portion bearingly connected to the shaft. The awning control apparatus includes a drive assembly to rotate the shaft in a storing direction to storingly roll the awning about the shaft, thereby pivoting the shaft and the support assembly generally toward the support structure, and to rotate the shaft in a releasing direction to releasingly unroll the awning from the shaft, thereby pivoting the shaft and the support assembly in a direction generally away from the support structure.

3,779,303

INSTALLATION FOR CONTINUOUS INGOT CASTING

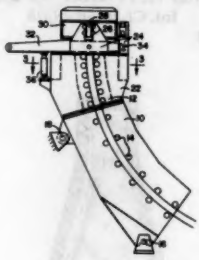
Joseph Pietryka, Paris, France, assignor to Fives Lille-Cail, Paris, France

Filed Jan. 4, 1972, Ser. No. 215,321

Claims priority, application France, Jan. 8, 1971, 7100416

Int. Cl. B22d *11/14*

U.S. Cl. 164—282 **3 Claims**



In a continuous ingot casting installation, the frame of an upper set of guide rollers for the ingot is supported directly on, and is rigidly fixed to, the frame of a lower set of ingot guide rollers, the frame of the lower set of guide rollers being supported on a base support. The ingot mold is guided for oscillating movement in the direction of the casting axis, and the ingot mold as well as the fixed elements guiding it during oscillation are carried by the frame of the upper set of guide rollers.

3,779,304

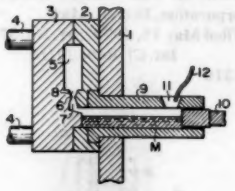
INJECTION GATE SYSTEM

Isao Miki, Fuji, Japan, assignor to Nippon Light Metal Company Limited, Tokyo, Japan

Filed July 13, 1971, Ser. No. 162,249

Int. Cl. B22d *17/08, 27/20*

U.S. Cl. 164—312 **5 Claims**



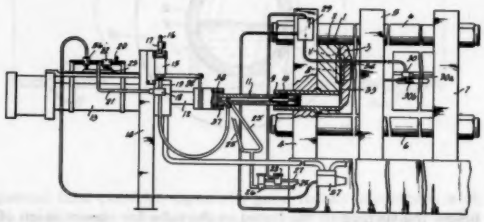
In an oxygen flush presure injection die casting system, the molten metal is introduced into the die cavity in a turbulent condition to achieve efficient mixing with the oxygen gas in such cavity and thus promote reaction of the metal with the gas and minimize the presence of blow holes in the cast product.

3,779,305

APPARATUS FOR LUBRICATING A DIE STRUCTURE EMPLOYED IN DIE CASTING OPERATIONS

William J. Pondelicek, Arlington Heights, and Vernon F. Schmidt, Chicago, both of Ill., assignors to Heich Die Casting Corporation, Chicago, Ill.

Filed Dec. 30, 1971, Ser. No. 213,867
Int. Cl. B22d 17/10
U.S. Cl. 164—312 5 Claims



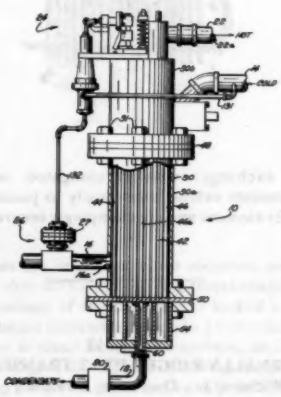
An apparatus for lubricating a die structure employed in die casting operations, and die therefore, whereby a quantity of lubricant is injected under gas pressure into the die cavity, and in which the plunger runs of the die casting machine is provided with a chamber for receiving the die lubricant, which chamber communicates with the inner end of the plunger and thus through the metal supply shot sleeve with the die cavity, the lubricant being discharged from the plunger by gas under pressure into the die cavity, with the apparatus being constructed to effect discharge of lubricant into the die cavity when the members of the die are in a closed position, and the plunger is in a position blocking the pour hole in the shot sleeve.

3,779,306

HEAT EXCHANGER

Warren M. Wilson, 809 Superior Dr., Huron, Ohio

Filed Apr. 27, 1970, Ser. No. 32,041
Int. Cl. B60h 1/00
U.S. Cl. 165—39 28 Claims



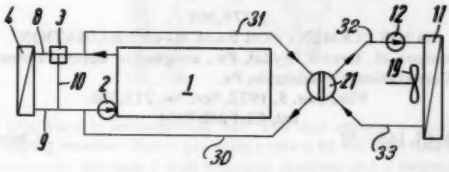
An improved heat exchanger mechanism for heating water to a predetermined temperature with steam includes means for controlling the output temperature of the heated water. The water to be heated and the steam are introduced into a heat exchange chamber and the heated water is discharged therefrom in accordance with the demand for the heated water. The means for controlling the output temperature of the heated water includes adjustable control means for mixing the heated water with unheated water and for controlling the flow of the steam to the heat exchange chamber to thereby enable the mechanism to provide the heated water at a demand location at a predetermined temperature which is easily varied by resetting the adjustable control means.

3,779,307

HEATING AND COOLING SYSTEM FOR MOTOR VEHICLES

Paul Weiss, Vaihingen; Helmut Bardong, Stuttgart, and Wolfgang Frank, Ludwigsbur-Ossweill, all of Germany, assignors to Firma Su Ddeutsche Kuhlerfabrik Julius Fr. Behr., Stuttgart-Feuerbach, Mauserat, Germany

Filed Nov. 26, 1971, Ser. No. 202,099
Claims priority, application Germany, Nov. 26, 1970, P 20 58 280.3
Int. Cl. B60h 1/06
U.S. Cl. 165—42 11 Claims



A heating and cooling system for motor vehicles having a primary circuit including a pump driven by the engine for cooling the engine of the motor vehicle and a secondary circuit including a pump driven independently of the engine for heating and cooling the passenger compartment of the motor vehicle. The two circuits are connected by a 4-way mixing valve or a hydraulic bridge so that the same coolant circulates through both circuits, but the circulation of coolant through the secondary circuit is independent of engine r.p.m. The secondary circuit further includes means to regulate the amount of hot coolant coming from the engine and cold coolant coming from a cooling means which enters the passenger compartment air heat exchanger so that the same heat exchanger can continuously control the temperature of the air passing therethrough from cold to hot.

3,779,308

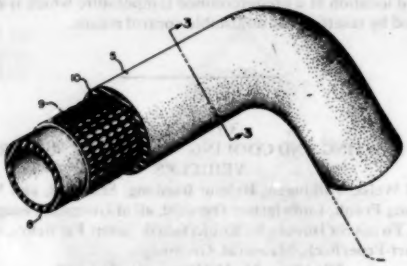
COOLING SYSTEM INCLUDING REINFORCED HOSE

Wayne H. Buhrmann, Martell, and Sidney R. Fix, Lincoln, both of Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 5,029, Jan. 22, 1970, Pat. No. 3,682,202.
This application Apr. 17, 1972, Ser. No. 244,371
Int. Cl. F01p 11/04; F01l 11/08
U.S. Cl. 165—51 10 Claims

An improved collapse-resistant, reinforced hose of flexible polymeric material including a semi-rigid generally circumferentially disposed supporting structure which includes preferably a single layer of textile fabric reinforcement, the major portion of which is composed of treated polyester or nylon fibers. The polyester or nylon fibers are treated with an organic polyisocyanate and preferably a solution of at least 2 percent organic polyisocyanate in a non-reactive solvent. The

hose has substantially improved bursting strength and resistance to vacuum collapse without the need of additional support, such as a metal wire insert. The invention is particularly useful for flexible radiator hoses used in automotive vehicle cooling systems.

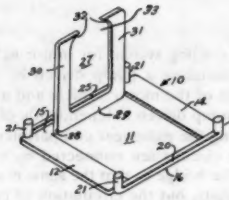


3,779,309

GUIDE ELEMENT FOR BASEBOARD RADIATION

Theodore M. Bunten, Rydal, Pa., assignor to Repco Products Corporation, Philadelphia, Pa.

Filed Jan. 5, 1972, Ser. No. 215,586
Int. Cl. F24h *9/04*
U.S. Cl. 165—55 **3 Claims**



A guide element for baseboard radiation is provided that is interposed between the bottoms of the fins of the radiation heat transfer units and the supporting brackets to hold the units in place and permit them to move noiselessly lengthwise along the brackets during expansion and contraction due to temperature changes. The guide element has portions engaging the heat transfer units to impart stability.

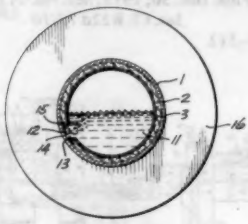
3,779,310

HIGH EFFICIENCY HEAT TRANSIT SYSTEM

George F. Russell, 1401 Thorne Rd., Tacoma, Wash.

Continuation of Ser. No. 817,483, April 18, 1969, abandoned. This application Apr. 5, 1971, Ser. No. 130,995
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **8 Claims**

A closed tube in substantially horizontal position and approximately half filled with vaporizable liquid under very low absolute pressure has one exterior portion of its length exposed to hot fluid from which heat is extracted to vaporize liquid in the tube and another exterior portion of its length exposed to a relatively cool fluid which extracts heat from the vapor in the tube and condenses it. Vapor formed in the portion of the tube exposed to the hot fluid migrates to the portion of the tube exposed to the cool fluid and the condensate resulting from such cooling flows back to the tube portion exposed to hot fluid. The major portion of the internal periphery of that portion of the tube exposed to hot fluid is lined with wicking, but a gap is left between ends of the arcuate liner below the surface of the liquid in the tube for transmission of heat from the fluid externally of the tube directly to liquid in the tube to expedite its vaporization at that location.

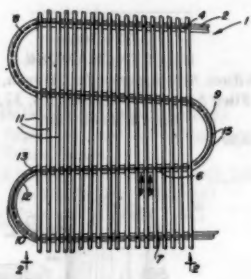


3,779,311

HEAT EXCHANGER

Joseph M. O'Connor, Chicago, and Stephen F. Pasternak, Park Ridge, both of Ill., assignors to Peerless of America, Incorporated, Chicago, Ill.

Filed Aug. 26, 1971, Ser. No. 175,264
Int. Cl. F28f *1/32*
U.S. Cl. 165—171 **9 Claims**



A heat exchanger wherein elongated, secondary heat transfer elements extend transversely to passes of a primary heat transfer element and are clampingly secured thereto.

3,779,312

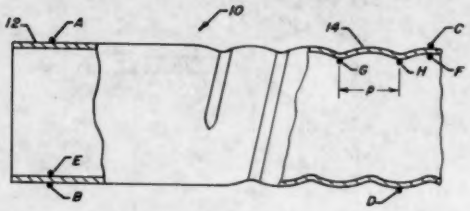
INTERNALLY RIDGED HEAT TRANSFER TUBE

James G. Withers, Jr., Dearborn; Edward P. Habdas, Dearborn Heights, and Mitchael W. Jurmo, Dearborn, all of Mich., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 7, 1972, Ser. No. 232,571
Int. Cl. F28f *1/14*
U.S. Cl. 165—184 **8 Claims**

Metal heat transfer tube has a single start helical ridge on its inner surface which conforms to a range of values of a disclosed equation relating the height of the ridge to its pitch and

to the inner diameter of the tube. A method of designing a tube for maximum performance is also disclosed. The improved tube provides especially good results in systems, such as steam condensation systems, wherein a single phase fluid is carried by the tube.

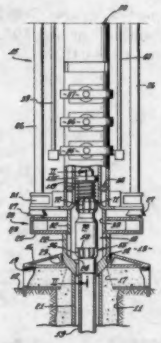


3,779,313

RELEASABLE CONNECTING APPARATUS FOR SUBSEA WELLHEAD

Albert Michael Regan, Huntington Beach, Calif., assignor to Regan Forge & Engineering Company, San Pedro, Calif.

Filed , Ser. No. 160,407
Int. Cl. E21b 7/12
U.S. Cl. 166—0.6 **10 Claims**



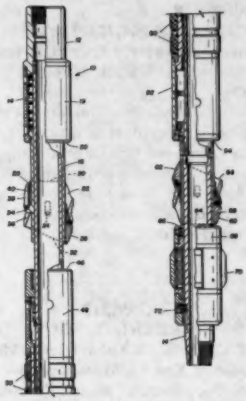
The apparatus has inner and outer members nonrotatably telescoped together with a driving ring therebetween which in an extended position of the members is locked to the inner member for rotation therewith, which in a contracted position of the members is freed from the members, and which has lower teeth mating with teeth on a casing hanger whereby when the casing hanger is suspended over its landing shoulder in a subsea wellhead, in order to maintain the apparatus in the extended position, right hand rotation of the string drivingly rotates the casing despite a left hand threaded attachment between the hanger and the outer member when the casing hanger engages the landing shoulder, but when the apparatus contracts to free the drive ring, right hand rotation of the string unscrews the left hand threaded attachment to release the apparatus from the casing hanger for withdrawal of the apparatus.

3,779,314

WELL TOOL AND RELEASING DEVICE THEREFOR

Norman Weldon Read, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 15, 1972, Ser. No. 253,087
Int. Cl. E21b 23/00
U.S. Cl. 166—216 **15 Claims**



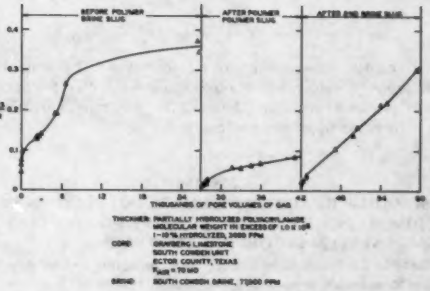
Disclosed is an improved well tool that utilizes a unitary gripping member that is pivotally carried by the well tool for movement between a wall engaging position and a retracted position wherein the well tool can be moved through the well bore. A sleeve extends through the gripping member and has a lug thereon that is engageable with the gripping member. A cam member carried by the sleeve or by the gripping member is engageable with both the gripping member and the well bore wall as the sleeve is moved upwardly relative to the gripping member to initiate movement of the gripping member from the well engaging position to the retracted position.

3,779,315

PRODUCTION METHOD

David F. Boneau, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1972, Ser. No. 284,483
Int. Cl. E21b 43/18, 33/138, 43/20
U.S. Cl. 166—268 **14 Claims**



A method of producing hydrocarbons from a subterranean hydrocarbon containing formation and reducing the flow of

gas from a gas cap of the formation by passing a preselected volume of polymeric solution into the formation at an elevation lower than the gas cap, terminating the injecting of the polymeric solution, and producing fluid entering the well bore while at least intermittently injecting one of a gas-water admixture or volumes of gas and water into the gas cap.

3,779,316

SECONDARY RECOVERY OF PETROLEUM

Lawrence L. Bott, Oak Park, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 2, 1971, Ser. No. 204,322. The portion of the term of this patent subsequent to Mar. 19, 1990, has been disclaimed.

Int. Cl. E21b *43/02*

U.S. Cl. 166—276 **5 Claims**

This invention relates to the secondary recovery of petroleum, and in particular, involves a process for reducing the amount of water recovered from a producing well in a water flooding process for recovering petroleum from a subterranean oil-bearing formation. This reduction in water is accomplished by introducing a stable liquid dispersion of a water soluble anionic vinyl addition polymer and a water soluble cationic polymer.

3,779,317

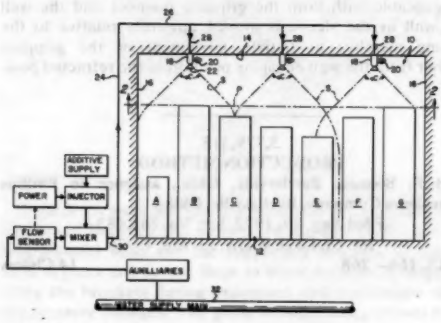
METHOD OF FIRE PROTECTION UTILIZING INDEPENDENTLY OPERABLE DISCHARGE HEADS

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Boston-Providence Turnpike, Mass.

Division of Ser. No. 864,612, Oct. 8, 1969, Pat. No. 3,645,338. This application Sept. 24, 1971, Ser. No. 183,668

Int. Cl. A62c *1/00*

U.S. Cl. 169—1 A **9 Claims**



A fixed fire protection system and method by which discrete areas of extinguishant coverage are selected for each of several nozzle heads on the basis of the maximum elevation of fuel surfaces in the space protected.

3,779,318

DISCHARGE HEAD FOR DISCHARGING FLUID IN TWO DISCHARGE PATTERNS AND FIRE PROTECTION SYSTEM INCORPORATING SAID HEAD

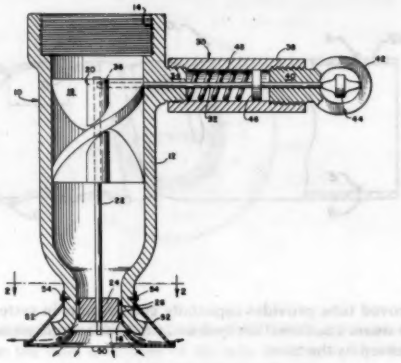
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Oct. 5, 1972, Ser. No. 295,237

Int. Cl. A62c *31/26*; **B05b** *1/26*

U.S. Cl. 169—1 B **14 Claims**

A discharge head and a fire protection system incorporating the head in which the head is in the form of a body member having an inlet adapted for connection to a source of fluid and an outlet for directly discharging the fluid in a solid conical



spray pattern. A curved deflector plate cooperates with the outlet of the head for intercepting a portion of the spray and forming an additional discharge pattern.

3,779,319

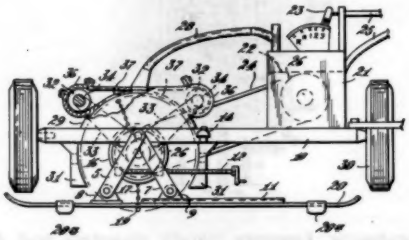
MOBILE SNOW WORKING APPARATUS WITH ADJUSTABLE HEIGHT FLAILER

Theodore J. Pease, 461 Faunce Corner Rd., North Dartmouth, Mass.

Continuation-in-part of Ser. No. 9,267, Feb. 6, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 247,142

Int. Cl. A01b *33/14*

U.S. Cl. 172—45 **14 Claims**



A trailer for breaking and pulverizing crusty and/or icy snow cover on a ski slope comprising a frame provided with wheels by means of which it may be transported over open roads and/or bare ground to a ski slope and skis for traversing the slope. The trailer frame has on it a motor-driven drum to which are attached a plurality of chain flails having at their distal ends breaker elements for cutting through the hard cover, and there are adjustable mounting members connecting the skis to the frame so as to enable raising and lowering the frame and hence the drum relative to the skis so that on the one hand the drum may be supported above and spaced from the snow cover to permit the flails to be turned at a rapid rate about the axis of the cylinder and to cause the breaker elements at their ends to break through the crust and on the other hand may be lowered into substantial engagement with the cover to cause the flails to become traction elements between the drum and the cover.

3,779,320

AGRICULTURAL MACHINE FOR TILLING THE SOIL

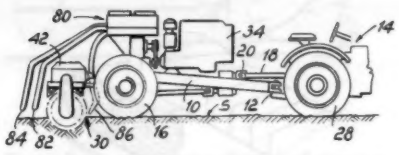
Natale Cantone, Corso M Prestinari 162, Vercelli, Italy

Filed Oct. 29, 1970, Ser. No. 85,021

Claims priority, application Italy, Nov. 5, 1969, 61113 A/69; Mar. 3, 1970, 84604 A/70; July 22, 1970, 27730 A/70; Sept. 29, 1970, 30330 A/70

Int. Cl. A01b *33/00*

U.S. Cl. 172—60 12 Claims



A main frame is supported, adjacent its rear end, by a pair of wheels, and the front end of the main frame is arranged for connection to the coupling pin of either a conventional tractor, preferably having a power take-off, or of a separate traction and steering assembly. An independent motor on the main frame drives rotatable ground-engaging agricultural implements supported on the main frame. These implements, when rotated by the independent motor on the main frame, are operable to work the soil, and develop with the soil, a thrust force tending to drive the main frame at a first speed determined by the reaction of the soil. The independent motor on the main frame is more powerful than the power take-off of the associated tractor or of the motor driving the separate traction and steering assembly.

The connection of the main frame to the coupling pin serves to transmit a reaction force between the main frame and the steering and control mechanism. The motor of the tractor or control and steering assembly is independent of the motor on the main frame, and constitutes the sole driving means for the wheels of the tractor or the steering and control mechanism, and tends to drive the tractor or steering and control mechanism at a second speed. The relative speed due to the first and second motors causes a reaction force to be transmitted through the connection coupling the main frame to the tractor or steering and control mechanism, to counteract increases and decreases in the thrust force exerted by the rotating agricultural implements. The main agricultural implement is a rotary hoe carrying laterally projecting tines, and divided into two sections which may be swung to a horizontal position, to extend to either side of the main frame, or to a vertical position, for compactness during transport along a highway or road. Other agricultural components on the main frame may include tanks containing soil treating materials, distributing means connected to these tanks, and other ground working implements.

3,779,321

DATA TRANSMITTING SYSTEMS

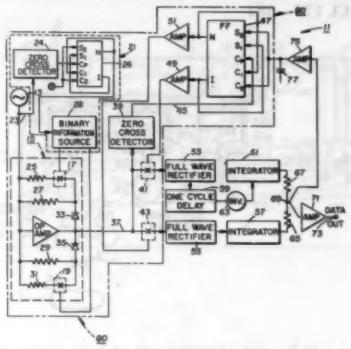
Donald C. Landwer, Arlington Heights, Ill., and Allan A. Lorenz, Mentor, Ohio, assignors to Teletype Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 104,380, Jan. 6, 1971, abandoned. This application June 30, 1972, Ser. No. 267,789

Int. Cl. H04l *27/02*

U.S. Cl. 178—66 R 13 Claims

Successive bits of serial data modulate successive alternate cycles of an alternating current reference signal. The modulated reference signal is separated into its modulated and its unmodulated cycles, or components, which are then full wave rectified. One of the components is then phase-shifted in time and inverted so that the cycles of the modulated and the unmodulated components occur simultaneously. Both the modulated and the unmodulated components are then integrated and averaged to obtain a signal which is representative of the original serial signal.



3,779,322

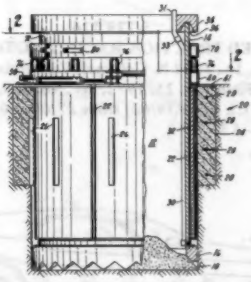
MACHINE FOR SINKING VERTICAL SHAFTS

Richard W. Stevens, Oconomowoc, Wis., assignor to Milwaukee Boiler Manufacturing Company, Milwaukee, Wis.

Filed Mar. 24, 1972, Ser. No. 237,659

Int. Cl. E21b *3/02, 19/08;* E21c *11/00*

U.S. Cl. 175—162 20 Claims



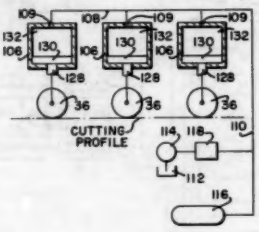
Apparatus for sinking a vertical shaft includes a tubular cutting head. The cutting head is positioned in a guide collar in the earth and is rotated by a rotary drive means to bore the shaft into the ground. A crane and clam shell bucket may be used to remove the spoil generated by this cutting action and to attach additional sections of casing to the cutting head. Means are provided to both urge the cutting head into the ground and to extract it from the shaft.

3,779,323

EARTH CUTTER MOUNTING MEANS

Carl R. Horten, Warren, N.J., and William H. Hamilton, Seattle, Wash., assignors to Ingersoll-Rand Company, Woodcliff, N.J.

Filed Apr. 27, 1972, Ser. No. 235,563
Int. Cl. E21c *13/00*
U.S. Cl. 175—381 8 Claims



Mounting arrangements for roller-type earth cutters, used in continuous boring or tunneling machine, which prevent an excessive loading of a cutter. In one embodiment, spring-type means urge the cutters outwardly from a support and thrust surface, such as a cutterhead, and yields under a predetermined load to allow inward movement of the cutter to prevent overloading thereof. In another embodiment, hydraulic-fluid-pressure-powered plungers, manifolded together from a common source of fluid pressure, urge cutters against the work face, and excessive loading of any one cutter displaces some of its plunger fluid to other cutter plungers whereby the loading is substantially averaged for all cutters.

ERRATUM

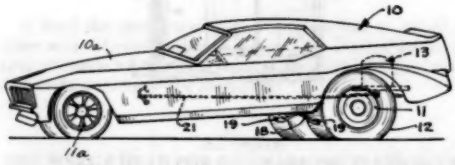
For Class 178—66 R see:
Patent No. 3,779,321

3,779,324

INCREASED TRACTION RACING MOTOR VEHICLE

Alvin Kreske, Jr., 2504 N. Calumet, Valparaiso, Ind.

Filed Jan. 21, 1972, Ser. No. 219,660
Int. Cl. B60b *39/02*; B60c *27/00*; B60s *3/00*
U.S. Cl. 180—1 R 4 Claims



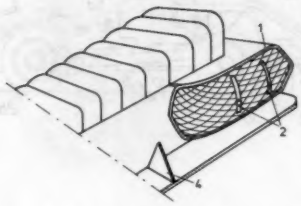
A device and for applying a liquid cleaning agent to the driving wheels of a racing vehicle to permit the tires to become more adherent to the track surface comprising a pressure tank containing the liquid cleaning agent and an under pressure conduit means leading from the tank to the rubber tires on the rear driving wheels of the vehicle, a filler cap for applying the liquid cleaner to the pressure tank, and a stem with a valve connected to the filler cap adapted to communicate with the nozzle of an air pressure source for applying air under pressure to the pressure tank.

3,779,325

MOTOR GUARD

Heikki Liuhanen, and Kauko Kallio, both of Oulu, Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Apr. 7, 1972, Ser. No. 242,184
Int. Cl. A63c *13/00*
U.S. Cl. 180—1 R 2 Claims



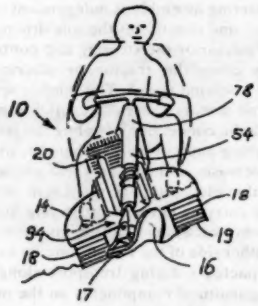
A detachable motor guard for cross-country and snow vehicles which normally serves to cover the engine compartment ventilation opening and which, in an emergency, can be detached and used as a snow shoe.

3,779,326

SNOW VEHICLES

Wolfgang Trautwein, 3529 Carroll Circle S.E., Huntsville, Ala.

Filed Oct. 4, 1971, Ser. No. 186,026
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R 7 Claims



A powered snow vehicle in which a frame portion upon which passengers are seated and a front ski are tiltable with respect to rear, snow engaging tracks, or skis, and with respect to terrain.

3,779,327

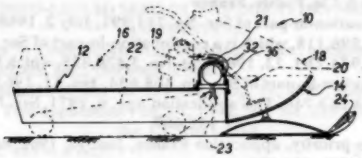
MUFFLER ASSEMBLY FOR SNOWMOBILES

Jules Pereault, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed Mar. 17, 1972, Ser. No. 235,674
Int. Cl. B62m *27/02*; B60k *13/06*, *13/04*
U.S. Cl. 180—5 R 9 Claims

The disclosure herein describes a muffler assembly consisting of a cover for completely enclosing the muffler of a snow-

mobile-like vehicle over an aperture provided through the frame of the vehicle. The cover provides a heat barrier between the muffler and the other surrounding components located under the hood of the vehicle while the frame aperture allows air and snow circulation around the muffler inside the



cover. To cut down on the intensification of vibration, in a first alternative, the muffler cover and the frame are separated from one another by vibration attenuating means. In another alternative, the muffler cover is fixed directly on the frame and the vibration attenuating means are disposed betwen the muffler and the cover.

3,779,328

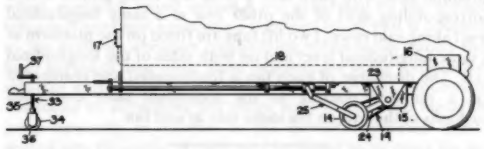
TRAILER MANEUVERING MECHANISM

John G. Wollenburg, 410 Clinton Ave., Oak Park, Ill.

Filed June 30, 1972, Ser. No. 268,033

Int. Cl. B62d *13/06*

U.S. Cl. 180—14 A **3 Claims**



A trailer drive wheel assembly for close quarter maneuvering of the trailer on which it is mounted. The assembly has an electric motor powered by a battery connected to the motor by a reversible switch. The motor is connected by drive means to a maneuvering wheel which can be raised and lowered between a traveling position and a working position by a retractable mounting means that is mounted on the underside of the trailer.

3,779,329

REARFACING ENGINE AND REARAXLE HAVING OFFSET DRIVE LINE

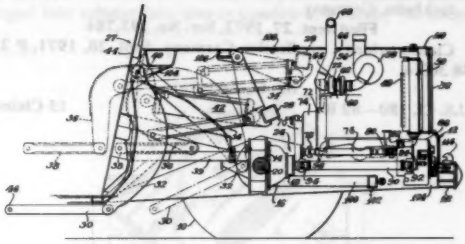
Edward D. Duke, Chicago, and Julius F. Marquardt, Westchester, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 15, 1972, Ser. No. 306,662

Int. Cl. B60k *5/02*

U.S. Cl. 180—54 F **12 Claims**

Automotive vehicle comprising an engine mounted adjacent one end of the vehicle having its power output end extending forwardly from the one end; and a power drive train connected to the power output end of the engine providing a path for conveying power, leading from the engine forwardly, then downwardly and laterally to one side of the engine, then rearwardly beneath that side to the engine rear, then laterally



beneath the engine rear to the opposite side of the engine, thence forwardly beneath that side of the engine for driving connection with a wheel axle of the vehicle.

3,779,330

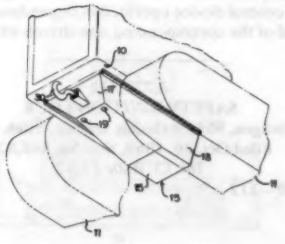
BELLY PROTECTIVE PAN FOR TRACTOR ENGINE

Mose Walter Longpre, P.O. Box 224, Alberton, Mont.

Filed Apr. 20, 1972, Ser. No. 245,952

Int. Cl. B62d *25/20*

U.S. Cl. 180—69.1 **5 Claims**



A protective shield or pan is removably mounted beneath the undercarriage of a tractor engine, enveloping the exposed surfaces of the oil pan beneath the tractor engine. It is guided along a longitudinal track assembly mounted to the tractor undercarriage. It is releasably secured by interlocking engagement of pivoted stops mounted along the interior sides of the belly pan and cooperative receiving slots formed through the supporting track assembly. The stops are externally operated by pivotal movement of a pulling hook at the outer end of the pan.

3,779,331

DEVICE FOR PREVENTION OF SPINNING OF THE DRIVEN WHEELS OF A MOTOR VEHICLE

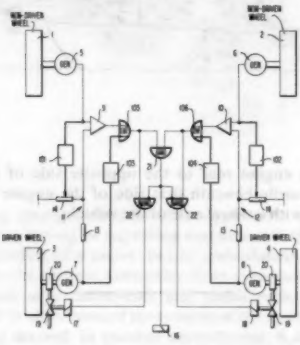
Manfred H. Burckhardt, Waiblingen; Hans-Jorg Florus, Goeppingen; Horst Grossner, Geradstetten; Hellmut Krohn, Esslingen, and Hermann Stein, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 27, 1972, Ser. No. 292,784

Claims priority, application Germany, Sept. 28, 1971, P 21 48 303.4

Int. Cl. B60t *8/06*

U.S. Cl. 180—82 R **15 Claims**



A system for preventing the spinning of the driven wheels of a motor vehicle, in which each wheel is equipped with a generator producing an electrical voltage proportional to the wheel rotational speed and in which the control voltage for the control of the driving or brake force is produced by a comparison of the voltage of a driven and of a non-driven wheel when exceeding a predetermined slippage threshold; the control voltage is obtained by feeding the voltages of the generators of the non-driven wheels to a respective differential amplifier while the voltages of the driven wheels are fed to the corresponding differential amplifier by way of a voltage divider whereby the ratio of division of the voltage divider is adjusted by a control device operated in dependence on the rotational speed of the corresponding non-driven wheel.

3,779,332

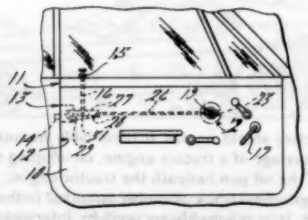
SAFETY IGNITION LOCK

Joseph D. Snitgen, 9656 Artesian, Detroit, Mich.

Filed Oct. 20, 1969, Ser. No. 867,828

Int. Cl. B60r *21/02*

U.S. Cl. 180—112 **8 Claims**



An automotive anti-theft device wherein the ignition switch is positioned in the driver's door and is interrelated with the door locking mechanism. The interrelationship between the door locking mechanism and the ignition switch is such that the key cannot be inserted in the ignition switch until the door is locked and the door cannot be unlocked until the key is removed.

3,779,333

MULTI-CUSHION AND MULTI-FAN SYSTEM FOR SURFACE EFFECT MACHINES

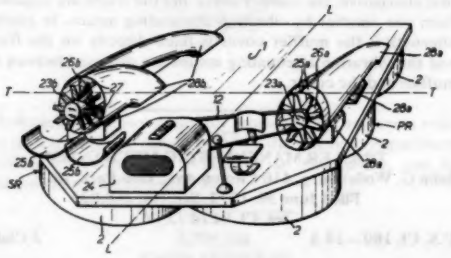
Jean Henry Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France

Continuation-in-part of Ser. No. 741,991, July 2, 1968, Pat. No. 3,586,118, which is a continuation-in-part of Ser. No. 502,934, Oct. 23, 1965, Pat. No. 3,478,835, which is a continuation-in-part of Ser. No. 165,634, Jan. 11, 1962, Pat. No. 3,263,746. This application Apr. 6, 1971, Ser. No. 131,607

Claims priority, application France, Jan. 17, 1961, 849,877; June 30, 1961, 866,604

Int. Cl. B60v *1/04*

U.S. Cl. 180—121 **5 Claims**



From the elongated platform of an air-cushion vehicle depend a plurality of cushion containing skirts alined behind each other in two parallel rows on opposite sides of the longitudinal axis, with each skirt of one row being paired with a corresponding skirt of the other row at a same longitudinal level along said rows. Two lift fans are fitted on the platform at a same longitudinal level and on both sides of the longitudinal axis. The discharge of each fan is fractionated and connected via a ramified ducting to the individual skirt contained cushions of the row on the same side as said fan.

3,779,334

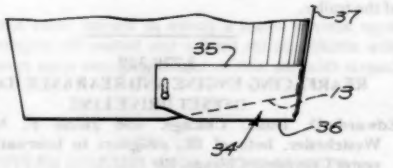
CELLS FOR FLUID CUSHION VEHICLES

Wilfred J. Eggington, Claremont, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 35,834, May 8, 1970, abandoned. This application June 7, 1972, Ser. No. 260,513

Int. Cl. B60v *1/00*

U.S. Cl. 180—121 **7 Claims**



The lower rear portion of the skirt of a fluid cushion cell for a fluid cushion vehicle is provided with a cutaway portion tending to maintain this rear portion raised somewhat further above the terrain than would be the case if the cutaway were not present. This reduces contact drag on the terrain or water

over which the vehicle is travelling and results in less wear and tear on the skirt of the cell. It also provides a thrust component by reason of the increased escape of fluid from the cell through the cutaway region. A similar cutaway formation can be made in a peripheral skirt for the vehicle if such peripheral skirt be present.

3,779,335

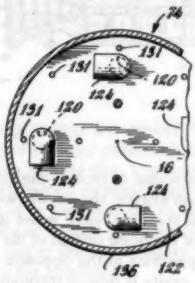
CONFINED-LIQUID SEISMIC EXPLORATION METHODS AND SYSTEMS

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Continuation of Ser. No. 851,268, Aug. 19, 1969, abandoned. This application Feb. 14, 1972, Ser. No. 225,851

Int. Cl. G01v *1/14*

U.S. Cl. 181—.5 NC **25 Claims**



Confined-liquid seismic exploration methods and systems in which powerful sound impulses are generated by the abrupt release of confined gases into a confined liquid that is coupled to the earth in vibration transmitting relationship during the brief period of time while these impulses are being transmitted into the earth. The repeatability of the powerful impulses is enhanced by permitting the entire mass of confined liquid to jump upwardly in reaction to the powerful impulses transmitted into the earth. Weight may be added to increase the intensity of the impulses transmitted into the earth. After the mass jumps into the air, it is then restrained from immediately returning to the earth, thus avoiding spurious "bouncing" impulses such as would occur if the liquid mass were allowed to fall back freely to earth. Total confinement of the liquid is provided thus intensifying the seismic impulses transmitted per unit volume of the liquid, enabling a relatively compact system to be utilized. The abruptly released gases are separated from the totally confined liquid in preparation for the next "shot" to be fired. The methods and systems described are conveniently applicable to many different types of sites, enabling a single survey crew to carry out highly effective survey work on hard ground, soft ground, marshy or swampy ground or submerged ground, as it is encountered on the job site.

3,779,336

DIAPHRAGM FOR SOUND TRANSDUCERS, METHOD AND APPARATUS FOR MANUFACTURING IT

Jose Juan Bertagni, 1027 Hernandaris St., Buenos Aires, Argentina

Filed June 27, 1972, Ser. No. 266,552

Int. Cl. G10k *13/00*; H04r *7/00*

U.S. Cl. 181—31 B **11 Claims**

Diaphragm for sound transducers and a method for manufacturing it, including providing a cellular plate-like member molded of granular starting material and defining a provisional flat front face and a rear face. A layer including said provisional flat front face is heat severed from the plate-like member, whereby a new concavely shaped front face and plate-like member is defined, where the contiguous severed cells become sealed in themselves and sealed together at the same time as they are subject to stresses and provide a hardened surface. Preferably a sheet-like member is adhered to the new front face and the curved plate-like member is then urged into substantially planar condition, whereby the sheet-

like member becomes stressed and the severed cells of the new front face are subject to additional stresses, so that the resulting diaphragm has a flat front face under a higher stress than the successive cells defining said diaphragm from said front face towards said rear face, the stresses progressively decreasing from said front face towards said rear face. The invention relates also to an apparatus for severing the layer including said provisional front face, from the rest of the plate-like member.

3,779,337

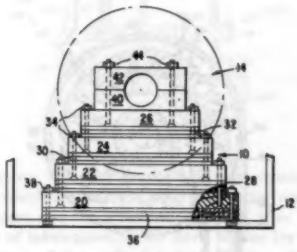
VIBRATIONLESS SPEAKER ASSEMBLY

William Henry Gregory, 1009 Richmond Ave., Victoria, British Columbia, Canada

Filed Nov. 27, 1972, Ser. No. 309,697

Int. Cl. G10k *13/00*; H04r *1/28*

U.S. Cl. 181—31 B **7 Claims**

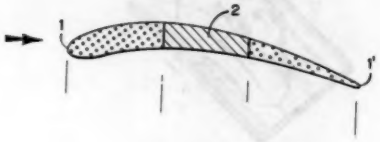


A vibrationless speaker assembly includes a speaker, an enclosure, and a speaker mount within the enclosure. The speaker mount is formed from alternate layers of rigid mounting blocks and vibration damping material with a split collar attached to one end of the mount. The other end of the mount is fixed in a speaker enclosure spaced from a baffle board having an orifice. An annular member of vibration damping material is secured around the periphery of the orifice. The speaker is mounted in the enclosure by pressing the speaker cone firmly against the annular member on the baffle board and securing the driving portion of the speaker by friction in the split collar to hold the speaker in position.

3,779,338
METHOD OF REDUCING SOUND GENERATION IN FLUID FLOW SYSTEMS EMBODYING FOIL STRUCTURES AND THE LIKE

Richard Earle Hayden, Arlington, Mass., and Robert Charles Chanaud, Boulder, Colo., assignors to Bolt, Beranek and Newman, Inc., Cambridge, Mass.

Filed Jan. 27, 1972, Ser. No. 221,223
Int. Cl. G10k 11/00; F01d 5/12
U.S. Cl. 181—33 C 7 Claims



This disclosure deals with preventing or at least reducing sound generation that normally results from fluid flow in various rotor and stator systems about the foil or blade surfaces from the developed fluid forces, by rendering at least portions of the blade of reduced flow impedance, as by rendering the same porous in various degrees.

3,779,339
MUFFLER

Howard R. Johnson, 3300 Mt. Hope Rd., Grass Lake, Mich.

Filed June 2, 1972, Ser. No. 258,988
Int. Cl. F01n 1/00, 1/08
U.S. Cl. 181—48 9 Claims

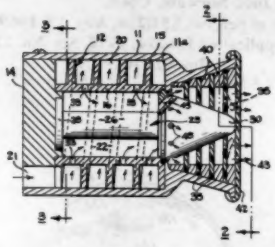
Gas flow induced by a pulsating pressure source such as an internal combustion engine, is conducted through a main duct having an acoustical impedance created by parallel branched, resonator chambers acting as low pass filters to gate low frequency pressure pulsations while absorbing higher frequency acoustical energy. Angled connecting passages between the main duct and the resonator chambers impart spin to the gas and create turbulent conditions for sonic wave transmission.

This invention relates to noise abatement devices or mufflers of the wave filter type.

3,779,340
MUFFLER AND SPARK ARRESTOR FOR INTERNAL COMBUSTION ENGINE

Edward H. Hoffman, and Clifford F. Kennedy, both of Simi Valley, Calif., assignors to Enviro-Acoustic R & D Inc., Duluth, Minn.

Filed Oct. 10, 1972, Ser. No. 296,072
Int. Cl. F01n
U.S. Cl. 181—49 19 Claims

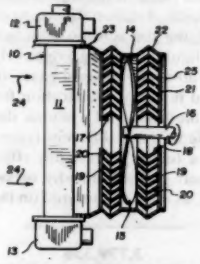


A tuned cavity is provided to receive the exhaust gases from an internal combustion engine, the cavity being proportioned so that an acoustical standing wave is set up therein at the principal frequency of the noise output of the engine, pressure nodes of this wave appearing at the opposite ends of the cavity. The gas from the cavity is passed through a series of apertures spaced therealong into a chamber in a manner so as not to significantly affect the standing wave pattern. The gas is then passed from the chamber to a section comprising flexible diaphragm means which acts as an inertial damper and a flap valve, the gas being exhausted into the ambient atmosphere from the diaphragm section.

3,779,341
NOISE SUPPRESSIVE FAN SHROUD

Homer D. Huggins, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Oct. 16, 1972, Ser. No. 297,994
Int. Cl. F01n 1/10, 1/24
U.S. Cl. 181—50 2 Claims



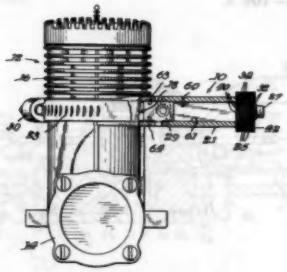
A noise suppressive fan structure and a heat exchanger having on one side thereof the fan structure in which the fan structure comprises a fan having blades rotatable about an axis and shrouds adjacent the fan comprising closely spaced sound absorbing baffles that are curvilinear, spaced apart and nested to provide a substantially complete shadow to the sound waves from the fan. Where the fan structure is used in conjunction with an air permeable heat exchanger the shroud may be on the side of the fan opposite the heat exchanger.

3,779,342

ENGINE NOISE DEPRESSING ASSEMBLIES

Dewey O. Broberg, Jr., Rt. 1, Box 102, Long Grove, Ill.

Filed Oct. 26, 1972, Ser. No. 301,178
Int. Cl. F01n 1/08
U.S. Cl. 181—56 8 Claims



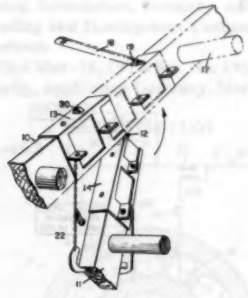
Noise depressing devices are provided for use in conjunction with engines of the type commonly used to power model aircraft, boats, cars and the like. The noise depressing devices include: (1) an elongated extension sleeve that is secured to and aligns at one of its ends with the exhaust port of an engine and (2) a plurality of spaced baffle plates secured to the opposite end of the sleeve that are designed to quietly diffuse the exhaust gases into the atmosphere.

3,779,343

UNITS FOR CONNECTING TOGETHER SUCCESSIVE LADDER SECTIONS

Callion Littlejohn, 5118 Dorchester Ave., Chicago, Ill.

Continuation-in-part of Ser. No. 249,152, May 1, 1972. This application July 26, 1972, Ser. No. 275,322
Int. Cl. E06c 1/383
U.S. Cl. 182—163 4 Claims



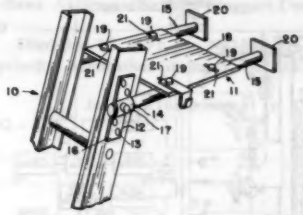
A sectionalized ladder of which the sections are provided with matching proximate, hinged together end portions to produce an integrated assembly; such hinged relationship permitting both sections to be brought into alignment with each other to produce an aligned section ladder of length greater than either of the sections, or may be folded into facial contact with each other to produce a double thickness unit of the length of a section, and locked in such aligned section thickness or such double thickness condition for ready transport or storage.

3,779,344

MULTI PURPOSE LADDER

Franklin D. Rister, Fort Mill, S.C.

Filed Oct. 10, 1972, Ser. No. 296,256
Int. Cl. E06c 7/14, 7/48
U.S. Cl. 182—214 1 Claim



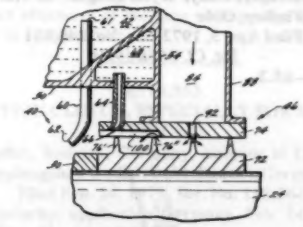
This invention relates to a ladder attachment adapted to support the top of a ladder spaced outwardly from a vertical supporting surface and a platform adjustable to various width ladders for the purpose of resting tools or equipment when not in use.

3,779,345

EMERGENCY LUBRICATION SUPPLY SYSTEM

Thomas Carl Barnes, Boxford, and Malcolm Hubert Knapp, South Lynnfield, both of Mass., assignors to General Electric Corporation, Lynn, Mass.

Filed May 22, 1972, Ser. No. 255,718
Int. Cl. F01m 1/20; F16n 29/02
U.S. Cl. 184—6.4 12 Claims



An emergency lubrication supply system operates to continuously provide oil to a lubricated part during normal operation of the part and for a limited duration after failure of a main supply of lubrication to the part. Means for providing a flow of pressurized air are further included in order to draw a sufficient stream of lubricant from an emergency reservoir to adequately lubricate the bearing for the limited duration after failure of the main system. The flow of pressurized air further acts to provide a cooling effect on the lubricated part.

3,779,346

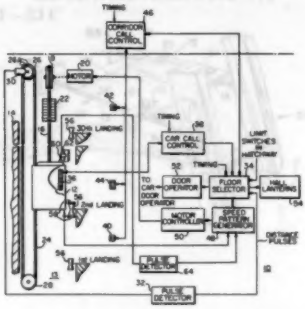
TERMINAL SLOWDOWN CONTROL FOR ELEVATOR SYSTEM

Charles L. Winkler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1972, Ser. No. 254,005
Int. Cl. B66b 1/30
U.S. Cl. 187—29 R 10 Claims

Terminal slowdown control for elevator systems which includes spaced markers and a detector, mounted for relative

movement as an elevator car approaches a terminal. The markers are spaced such that if the elevator car is approaching the terminal with a constant deceleration rate, the combination of the spaced markers and detector will produce pulses at a constant rate. If this constant rate is within a predetermined range, the slowdown is normal. If the rate is faster than a



predetermined value, comparison means provides a speed error signal which may be used to initiate terminal slowdown, and the same speed error signal may be used to generate an auxiliary speed pattern voltage for use by the elevator control in bringing the car to a stop according to a predetermined deceleration schedule.

3,779,347

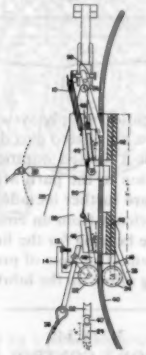
CABLE CATCHER

Arthur A. Chevalier, Cody, Wyo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Apr. 3, 1972, Ser. No. 240,681

Int. Cl. B65h *59/16*

U.S. Cl. 188—65.2 **5 Claims**



A device for catching a cable, e.g., a downhole oil well pump power cable, to prevent reverse motion of said cable. The device catches the cable in a pair of wedge-type slips, preventing the cable from dropping down the wellhole during its withdrawal from the hole.

3,779,348

SHOE-DRUM BRAKES

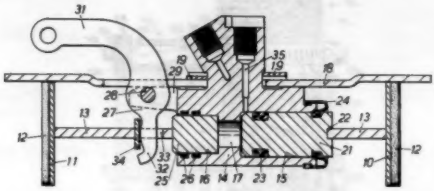
Glyn Philip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England

Filed Sept. 2, 1971, Ser. No. 177,890

Claims priority, application Great Britain, Sept. 3, 1970, 42,112/70

Int. Cl. F16d *65/24*

U.S. Cl. 188—106 A **3 Claims**



In hydraulic and mechanical actuating means for an internal shoe-drum brake an hydraulic slave cylinder has opposed aligned bores of different diameter in communication at their inner ends and a piston working in the bore of larger diameter acts on one shoe while a piston working in the bore of smaller diameter and a bell-crank lever mounted on the cylinder act on the other shoe.

3,779,349

VEHICULAR AIR-POLLUTION PREVENTIVE APPARATUS

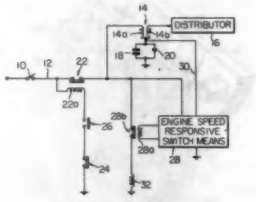
Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sept. 12, 1972, Ser. No. 288,409

Claims priority, application Japan, Dec. 10, 1971, 46/99959; Feb. 25, 1972, 47/19519

Int. Cl. F02n *17/00*

U.S. Cl. 192—.092 **16 Claims**



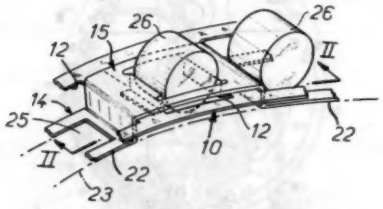
To prevent emission of toxic compounds from an automotive engine during idling as in the case where the motor vehicle is stopped at a crossing or on a jammed highway, an apparatus is provided which includes first switch means responsive to a temperature of the engine and second switch means responsive to an uncoupled condition of a power transmission system. These two switch means are connected to an ignition coil and de-energize the coil when the engine temperature is higher than a predetermined level and concurrently the transmission system is in an uncoupled condition.

3,779,350

FREE-WHEEL MECHANISMS AND FREE WHEELS INCORPORATING SUCH MECHANISMS

Michel Theophile Rist, Boulogne, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed July 26, 1972, Ser. No. 275,271
Claims priority, application France, July 27, 1971, 7127411
Int. Cl. F16d 15/00
U.S. Cl. 192—45 6 Claims



The invention relates to improved free-wheel mechanisms adapted to couple together or to disconnect two members capable of relative rotation. The free-wheel mechanism is intended to co-operate with inner and outer circular tracks, one of said tracks having ramp means and the other of said tracks having a plain surface, comprising a plurality of jamming members and a cage therefor, said cage comprising two parts, a first part having a plurality of circumferentially spaced windows for receiving the jamming members, and a second part having a plurality of depressions received in said windows and portions folded over said first part for limiting at least relative radial movement of said parts, the bottom end of at least one of said depressions providing a friction surface for cooperation with said plain track surface.

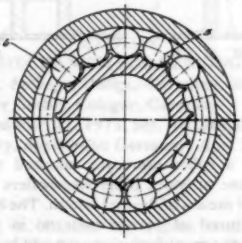
The free-wheel mechanisms find advantageous applications in vehicle transmission systems, for example in hydraulic torque converters.

3,779,351

COMPOSITE SLIDING AND ROLLING BEARING

Georg Hentschel, Schweinfurt, Germany, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Mar. 16, 1972, Ser. No. 235,339
Claims priority, application Germany, Mar. 17, 1971, G 71 10 173.0
Int. Cl. F16d 15/00
U.S. Cl. 192—45.2 11 Claims



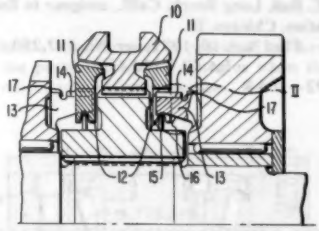
A composite rolling and sliding bearing comprising an outer and inner ring and a plurality of intermediate bearing elements arranged therebetween. Each of the bearing elements is provided on one side with a convexedly formed face adapted to slide and roll against one ring and on the opposing side with suitable means for tilting or rocking the element with respect to the other ring.

3,779,352

BLOCKING SYNCHRONIZING ARRANGEMENT FOR MOTOR VEHICLE CHANGE-SPEED GEARS

Gunter Worner, Rommelshausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuggart-Unterturkheim, Germany

Filed Dec. 15, 1971, Ser. No. 208,216
Claims priority, application Germany, Dec. 15, 1970, P 20 61 621.1
Int. Cl. F16d 23/06
U.S. Cl. 192—53 F 10 Claims



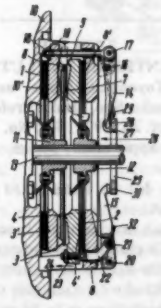
A blocking synchronization for motor vehicle change-speed transmissions, in which an axially displaceable shifting sleeve cooperates with synchronizing rings that are also axially displaceable and rotatable within limits; the synchronizing rings, in their turn, cooperate by means of blocking surfaces with the engaging tooth system at the gear whereby the blocking teeth at the synchronizing ring and at the gear are separate in effect from the engaging tooth system at the shifting sleeve and at the gear while the shifting sleeve in its engaged position abuts axially at an abutment of the gear whereas the synchronizing ring is free in such position.

3,779,353

FRICTION CLUTCH, ESPECIALLY FOR MOTOR VEHICLES

Paul Maucher, Sasbach, Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Buhl (Baden), Germany

Filed Feb. 24, 1971, Ser. No. 118,364
Claims priority, application Germany, Feb. 24, 1970, P 20 08 424.6; Dec. 18, 1970, P 20 62 410.6
Int. Cl. F16d 13/44
U.S. Cl. 192—70 8 Claims



Friction clutch, especially for motor vehicles, includes a housing, a pair of torque-transmitting friction discs disposed in

the housing, a respective pressure plate located adjacent each of the friction discs, lever means operatively connected to the pressure plates and actuable for displacing the pressure plates in axial direction of the clutch, the pressure plates having friction surfaces facing away from one another and being formed with annular seats on respective surfaces thereof facing toward one another, a plate spring disposed between the pressure plates and engaging the annular seats, the housing being securable to a flywheel and being formed with a reaction surface engageable by one of the friction discs, the flywheel having a reaction surface engageable by the other of the friction discs, and means for rotationally entraining the pressure plates, both of the friction discs having respective hubs mountable on a single driven member for transmitting torque thereto.

3,779,354

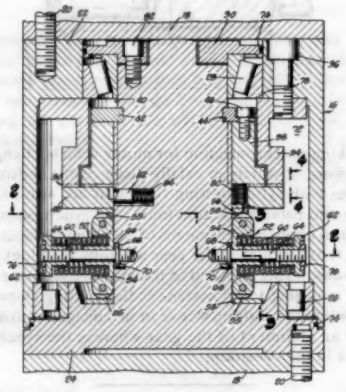
PROTECTIVE OVERSPEED TORQUE COUPLING

Rowland E. Ball, Long Beach, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 10, 1971, Ser. No. 197,250

Int. Cl. F16d *43/24*

U.S. Cl. 192—104 R **7 Claims**



A rotatable coupling adapted to transmit torque between a driving unit and a driven unit such as a centrifugal pump including a first member adapted to rotate with a second member, a linkage mechanism such as meshing gears or dogs normally locking the first member from rotation with respect to the second member and a release mechanism responsive to rotational speed of the coupling which will release the linkage mechanism at a predetermined rotational speed over normal speed and permit free rotation of the first member with respect to the second member.

3,779,355

CENTRIFUGAL CLUTCH

Yoshihiro Okuno, Toyonaka, Japan, assignor to Kabushiki Kaisha Daikin Seisaku-Sho, Osaka Prefecture, Japan

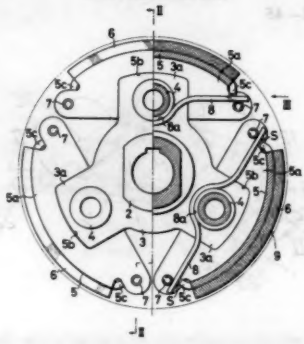
Filed Oct. 26, 1971, Ser. No. 192,162

Claims priority, application Japan, Oct. 29, 1970, 45/107898

Int. Cl. F16d *43/14*

U.S. Cl. 192—105 BA **3 Claims**

A centrifugal clutch in which two brackets are mounted on the opposite ends of a clutch boss and each formed with guide projections and saddle-like arcuate shoes each having a lining and a guide recess fitted with each pair of the opposing guide projections of the brackets so as to be movable radially of the clutch. A stud pin extends between each pair of the opposing guide projections. Holding portions are formed at the circumferentially opposite ends of each of the shoes. Springs each having a longitudinally middle portion in engagement with the outer periphery of each of the stud pins and opposite ends caught on the holding portions urge the shoes toward the center of the clutch, but the outward movement of the opposite ends of the springs is limited by restricting portions at the opposite ends of the shoes when they are forced outward under the action of a centrifugal force. The springs or guide plates on the inner faces of the shoes prevent the shoes from removing from the guide projections in the axial direction of the clutch.



3,779,356

ROLLER FOR ROLLER CONVEYORS

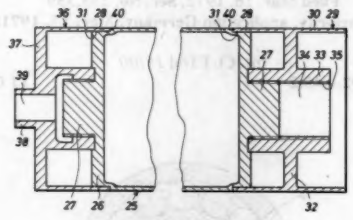
Torben Jorgenso, Kolding, Denmark, assignor to Kastrup og Holmegaards Glasvaerker A/S, Copenhagen K., Denmark

Filed Feb. 11, 1972, Ser. No. 225,574

Claims priority, application Denmark, Feb. 12, 1971, 647; Aug. 31, 1971, 4261

Int. Cl. B65g *13/00*

U.S. Cl. 193—37 **5 Claims**



A roller for a roller conveyor adapted to be mounted together with one or more other like rollers to constitute a composite roller means of desired length. The roller is adapted to be manufactured of plastic material in a blow casting process, so that the manufacturing cost will be low. The roller is provided with coupling means for coupling with other rollers or coupling members for building a composite roller means. The coupling means are adapted for easy disengagement and for rigid and strong connection between all the elements in the composite roller.

3,779,357

DEVICE FOR CONTROLLING A SELF-SERVICE DISPENSER USING IDENTIFICATION DATA CARRIERS

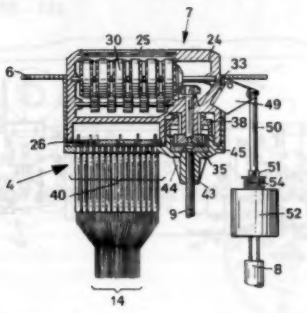
Willi Haller; Richard Lebhere, and Kurt Kratt, all of Aldingen, Germany, assignors to Firma J. Hengatter KG, Aldingen, Germany

Filed July 27, 1971, Ser. No. 166,509

Claims priority, application Germany, July 29, 1970, P 20 37 580.8

Int. Cl. G07f *13/02*

U.S. Cl. 194—5 6 Claims



A device for controlling a self-service dispenser which includes a quantity and/or price recording mechanism connected to the dispenser includes a reader having a plug-in receiver. The plug-in receiver includes a lower receiving panel with a plurality of electrical contact elements arranged in a pattern and which are engageable with identification feelers carried by a plug-in identification device which is engageable in the plug-in receiver. The reader also carries a digital counter having a drive shaft which is connectable to the quantity or price recording mechanism upon interengagement of the plug-in identification device with the plug-in receiver. The article dispenser is provided with a start or a release signal operating means which energizes a solenoid causing interengagement and locking between the plug-in receiver and the plug-in identification device. During the delivery of the articles, the digital counter is driven by the recording mechanism which is actuated by the dispenser to indicate either the quantity of the devices dispensed or the price of these articles. When the delivery is completed, the solenoid releases the pawl to permit disengagement of the identification device.

3,779,358

ACTUATING MECHANISM FOR VENDING AUTOMATS

Helmut Borner, Solingen-Ohligs, Germany, assignor to Andreae & Mayer GmbH, Cologne, Germany

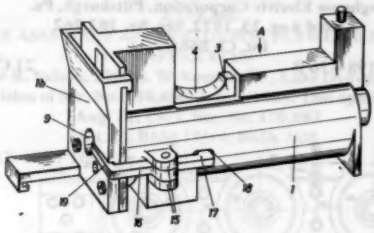
Filed Apr. 21, 1972, Ser. No. 246,228

Claims priority, application Germany, Apr. 23, 1971, P 21 19 833.4

Int. Cl. G07f *11/00*

U.S. Cl. 194—75 8 Claims

An actuating mechanism for a coin controlled vending machine in which a locking member is provided reciprocable against a spring bias from a rest position to an actuated position wherein vendable material is released from the vending machine. The locking member has a bore therein and a pressing member is provided for moving the actuating member and is receivable in the bore. A coin slot is provided for receiving a coin which will close the end of the bore in the actuating member to permit actuation thereof by the pressing



member while a coin receiver is provided for receiving the coin near the position which it occupies when the locking member is moved into actuated position.

3,779,359

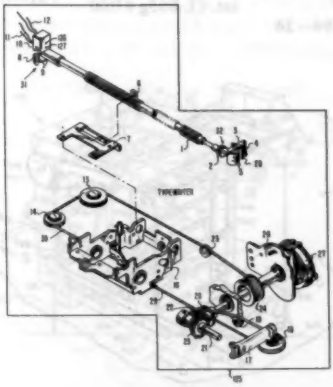
SYSTEM FOR PERFORMING CARRIER RETURN OPERATION

Donald J. Morrison, and Reuben Raesz, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,679

Int. Cl. B41j *19/70*

U.S. Cl. 197—66 12 Claims

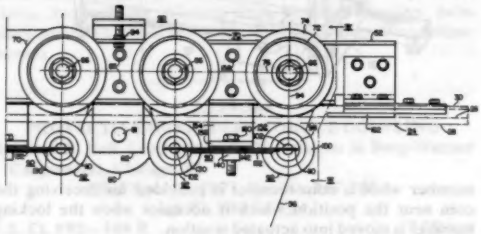


A system for performing a carrier return operation in a typewriter, printer, etc., having a leadscrew controlled carrier, and controlling when the carrier is to be returned dependent upon a carrier return signal generated in conjunction with combinations of generated signals indicative of rotation and non-rotation of the leadscrew, and the leadscrew rotational position. The system is structured such that the carrier will be returned and properly positioned at the left margin of starting line upon termination of escapement, and upon signals being generated indicating that the leadscrew is in its home rotational position.

3,779,360
TRANSPORTATION DEVICE HAVING MOVABLE HANDRAILS

Mohammed Amin El Taher; Erno Balogh, both of Gettysburg, Pa., and Henry Boltrek, Freeport, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1972, Ser. No. 283,262
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 R **21 Claims**

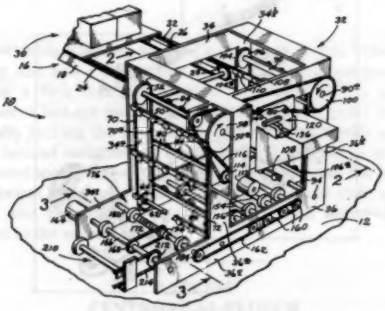


A transportation device having an endless handrail driven about a closed loop by drive means which include traction and pressure rollers. The pressure rollers are biased against the handrail, opposite the traction rollers, by biasing means which includes at least one main leaf spring member. The leaf spring member is stressed from a predetermined unstressed curved configuration to a flat configuration when the handrail is disposed between the traction and pressure rollers.

3,779,361
ARTICLE HANDLING APPARATUS

Robert A. Schmitt, Vancouver, Wash., assignor to Columbia Machine Inc., Vancouver, Wash.

Filed Aug. 20, 1971, Ser. No. 173,480
Int. Cl. B65g *47/00*
U.S. Cl. 198—24 **1 Claim**

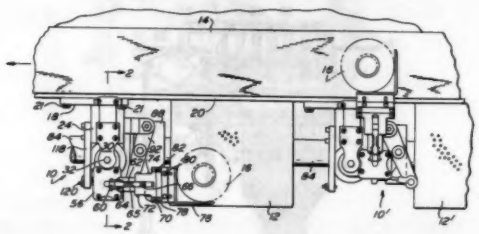


Article handling apparatus including a lowerable platform adapted to receive an article at one elevation and to lower it. A puller is provided for shifting such an article laterally and into proper position on the platform when at its one elevation. The puller includes an elongated, rocking arm having opposed article-engaging and cam-engaging ends. The arm is shiftable along a horizontal path between an extended position where its article-engaging end is under the platform and a retracted position where such end is spaced to one side of the platform. The cam-engaging end of the arm rides on a track which controls rocking of the arm, whereby its article-engaging end is below the elevation of the platform when the arm is extended and is raised above such elevation when the arm is shifted from its extended toward its retracted position. When the arm raises and retracts it frictionally engages the base of an article on the platform and shifts the article laterally on the platform.

3,779,362
GLASS CONTAINER HANDLING APPARATUS

Larry L. Horn, Winchester, Ind., assignor to Maul Bros. Inc., Millville, N.J.

Filed Oct. 13, 1971, Ser. No. 188,929
Int. Cl. B65g *47/00*
U.S. Cl. 198—24 **10 Claims**

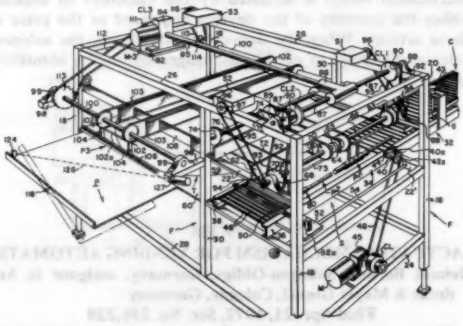


A 90° pusher for handling glass containers, convertible from righthand to lefthand and vice versa, is self-contained and includes a housing supported by a bracket and rotatable about a center post. Rotation of the housing is effected by means of a dual surface cam track and linkage actuated thereby. The pusher has an automatic reset feature if a jam occurs.

3,779,363
DISC TYPE PATTERN MAKER AND METHOD

Ronald D. Elson, Merrill; Norman O. Krenke, Saginaw, and Charles E. Ingram, Freeland, all of Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed Sept. 21, 1970, Ser. No. 73,981
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AB **55 Claims**



Pattern forming apparatus and methods for grouping food products, such as loaves of packaged bread, into any one of a plurality of different patterns comprising: a turntable; a longitudinally extending conveyor for conveying products in a longitudinal path along one side of the turntable; a pair of end-to-end transversely movable pusher members which are selectively, individually or collectively, movable for selectively pushing products from the conveyor to the turntable; and

drive mechanism for turning the turntable through a partial revolution to reorient the products thereon prior to the products following being moved thereto.

3,779,364

TRANSPORT DEVICE, MORE ESPECIALLY FOR SCREEN PRINTING MACHINES

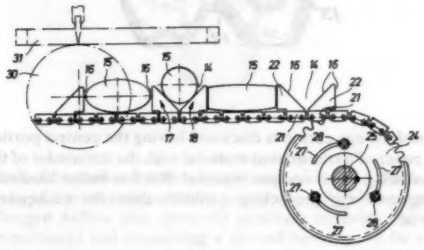
Wilfried Kammann, Suedlengern, Germany, assignor to Werner Kammann, Buende-Westphalia, Germany

Filed June 3, 1971, Ser. No. 143,635

Claims priority, application Germany, June 19, 1970, P 70 23 045.4

Int. Cl. B65g *15/10, 17/42*

U.S. Cl. 198—131 **11 Claims**



A transport device, more espeically for screen printing machines, with conveying chains which run parallel and spaced apart and hold the workpieces to be moved in receptacles, wherein each receptacle which carries one end region of a body, is formed from two catches which are provided on two adjacently running conveying chains which face each other, and have lugs which engage the receptacle, which is open upwards, the said lugs having faces which are vertical or inclined with respect to the longitudinal direction of the chains, and in which two chains are movable with respect to one another in the longitudinal direction of the chains to form differently shaped or dimensioned receptacles.

3,779,365

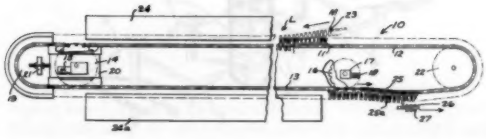
ARTICULATED CONVEYOR STRUCTURE

Louis P. Yakubek, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 10, 1971, Ser. No. 170,561

Int. Cl. B65g *17/00*

U.S. Cl. 198—131 **6 Claims**



A conveyor structure for use where accuracy is desired between succeeding portions of the conveyer and, at the same time, wear is to be minimized. The conveyor comprises a plurality of interconnected links. Each link comprises a body having at least two longitudinally spaced openings. A bushing is resiliently mounted in each opening by a relatively resilient but solid plastic molded in situ between the periphery of the bushing and the opening. The links are interconnected by pins extending through the aligned bushings of succeeding links and the pins engage a rotary element such as a sprocket to produce a driving engagement between the rotary element and the conveyor.

3,779,366

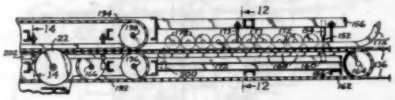
CORE ASSEMBLY APPARATUS FOR PLYWOOD LAY-UP APPARATUS

Victor R. Nelson, 2700 S. W. Summit Dr., Lake Oswego, Oreg.

Division of Ser. No. 734,466, Jan. 4, 1968. This application Aug. 11, 1971, Ser. No. 170,882

Int. Cl. B65g *15/14;* **B65h** *7/08*

U.S. Cl. 198—160 **5 Claims**



Bottom veneer plies are arranged end to end and conveyed continuously under a core assembly unit where core strips are crowded together in edge-abutting relationship, trimmed to desired panel width and laid upon the bottom plies, after which overlay veneer plies are laid end to end over the core ply and the assembly conveyed to a cut-off unit where it is cut to plywood panel lengths for subsequent stacking and delivery to a press.

3,779,367

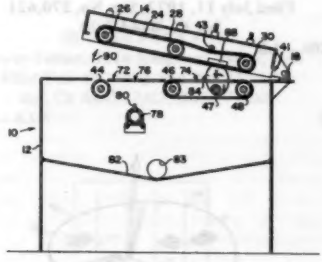
CLEANING MACHINE

Richard P. Hope, Odessa, and Henry B. Long, Tampa, both of Fla., assignors to Auto-Mat Corporation, Tampa, Fla.

Filed Oct. 9, 1970, Ser. No. 87,994

Int. Cl. B65g *15/14*

U.S. Cl. 198—167 **6 Claims**



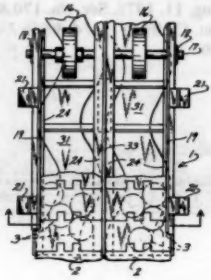
A machine designed to clean mats, rugs and the like by means of a high powered liquid spray impinging upon the mats as they are conveyed through the machine. An endless driven belt engages the upper surface of the mat and carries it through the machine, over grates through which the spray is directed. A pair of driven, spring-loaded rollers are positioned at the entrance and exit to the machine such that the first pair of rollers pulls the mat into the machine and the second pair of rollers forces the mat out the exit of the machine while simultaneously squeezing the excess water from the mat. Access to the interior of the machine is accomplished by a top which may be lifted from the tank of the machine by means of a lever and cam arrangement.

3,779,368

WEAR STRIP CONSTRUCTION FOR CONVEYOR

Wayne A. Smith, Shorewood, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Nov. 17, 1971, Ser. No. 199,545
Int. Cl. B65g 15/60
U.S. Cl. 198—204 6 Claims



An improved wear strip construction for a conveyor. The conveyor includes a pair of spaced side walls and the upper and lower extremities of each side wall are provided with inwardly extending flanges. Metal wear strips are snap fitted on the upper flanges of the side walls and serve to support the side edges of a plastic link belt conveyor chain in a conveying path of travel, while a sinusoidal metal wear strip is supported on the lower flanges of the side walls and serves to support the link chain in its return path of travel.

3,779,369

ART PAINT SAVER

Jack H. Lang, 9709 W. Olympic Blvd. No. 19, Beverly Hills, Calif.

Filed July 11, 1972, Ser. No. 270,621
Int. Cl. B44d 3/00
U.S. Cl. 206—1.8 3 Claims

A paint saver for artists' use adapted to be used with a palette having spaced paint regions thereon comprising a hollow cup-like member with a peripheral flange surrounding an opening; and adhesive means disposed on the flange for detachably securing said member to the palette with the opening in contact with the palette and surrounding at least one of the regions.

3,779,370

EGG CARTON

Gerald A. Snow, Cumberland Foreside, and Harold A. Doughy, Cape Elizabeth, both of Maine, assignors to United Industrial Syndicate, Inc., Portland, Maine

Filed Feb. 25, 1972, Ser. No. 229,299
Int. Cl. B65d 1/36, 25/54
U.S. Cl. 206—45.31 3 Claims

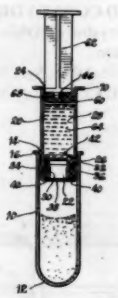
A molded egg carton is disclosed having the central portion of its cover of a transparent material with the remainder of the carton being of an opaque material that has better load-supporting and egg protecting qualities than the transparent material.

3,779,371

PACKAGE OF SEPARATED MATERIALS TO BE MIXED

Walter M. Rovinski, 16 Cambridge Rd., Turnersville, N.J.

Filed Mar. 13, 1972, Ser. No. 234,064
Int. Cl. B65d 81/32
U.S. Cl. 206—47 A 13 Claims



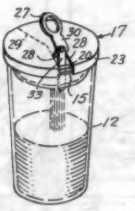
A package in which two materials maintained in separated relation can be mixed and dispensed in which a liquid is preloaded in one member and a material to be taken up in the liquid in another member and the two members are joined to form a package in which the materials are maintained in their separated relation but in which the liquid can be transferred from the one member to the other without member separation for taking up the other material in solution or suspension.

3,779,372

CONTAINER FOR THE COMPONENTS OF MIXED DRINKS

Herminia Albarez Gil de Lloret, Quinta Los Anso Avenida "C" Urbanizacion, Caracas, Venezuela

Filed Mar. 28, 1972, Ser. No. 238,835
Claims priority, application Spain, Apr. 1, 1971, 167,545
Int. Cl. B65d *25/08*
U.S. Cl. 206—47 A 12 Claims



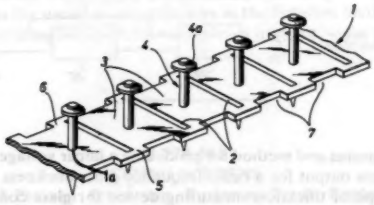
A dual container for two components of a mixed drink, consisting of a main compartment containing a first beverage and a flanged hollow cap normally sealingly covering the main compartment and containing a second beverage to be mixed with the first beverage. The hollow cap has a tearable top wall section provided with a ring-shaped tab. A rigid pointed lever is attached to the underside of the tearable wall section and is rotated downwardly when the tearable top wall section is pulled upwardly by tension exerted on the ring-shaped tab, rupturing the bottom wall of the hollow cap and allowing the second beverage to flow downwardly into the first beverage. The tearing of the top section breaks the cap flange and allows the cap to be removed, whereby the main compartment may then be employed as a drinking cup.

3,779,373

NAIL HOLDER FOR A SETTING DEVICE OPERATED BY EXPLOSIVE FORCE

Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Fuerstentum, Liechtenstein

Filed Aug. 25, 1971, Ser. No. 174,847
Claims priority, application Germany, Aug. 28, 1970, P 20 42 769.4
Int. Cl. B65d *83/00*
U.S. Cl. 206—56 DF 3 Claims



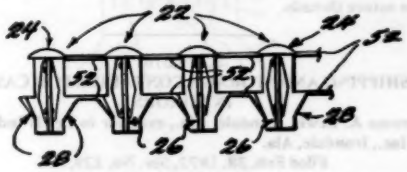
A nail holder for feeding nails serially into a setting device from which they are driven by an explosive force into a target material is formed by an elongated belt or strip which has a plurality of longitudinally spaced holes each of which holds the shank of a nail. Between each pair of holes a transversely extending slot is arranged which extends across a major portion of the strip between its longitudinal edges. When a nail is driven from the setting device, its head contacts the strip and the section between the slots separates from the remainder of the strip forming a disc or washer on the shank of the nail. The disc or washer has an area which is a multiple of the area of the nail head and its extended surface is useful in securing low strength materials to the target material.

3,779,374

MOLDED PLASTIC FASTENER

Kenneth R. Bockenstette, Cincinnati, Ohio, assignor to Vanguard Industries, Inc., Cincinnati, Ohio

Filed Oct. 20, 1971, Ser. No. 191,116
Int. Cl. B65d *69/00*; F16b *21/08*
U.S. Cl. 206—56 DF 10 Claims



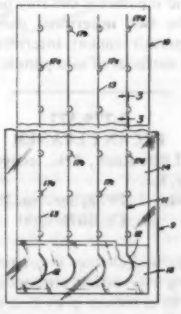
A fastener molded of elastomeric material into an integral structure having a pair of locking parts integrally connected at their ends to the free end of the shank part of the fastener and the head part of the fastener respectively, the locking parts including perpendicularly disposed locking surfaces and inclined cam surfaces leading thereto from the free end of the shank part, the fastener serving to secure two elements together when moved axially through aperture menas formed therein into an operative position, during which movement the cam surfaces are operable to flex the locking parts both with a tortional movement about the integral end connections thereof and with an inward bending movement between the integral end connections thereof so that the flexure will cause the locking parts to move outwardly when the fastener reaches its operative position permitting the locking surfaces to effect the securement of the elements together. A plurality of the fasteners are integrally connected in a row with the shank parts extending generaly perpendicular to the extent of the row formation.

3,779,375

SUTURE PACKAGE

Alliene Caraway Foster, 3016 Kingston, Dallas, Tex.

Filed Feb. 17, 1972, Ser. No. 227,183
Int. Cl. A61l *17/02*; B65d *73/00*
U.S. Cl. 206—63.3 9 Claims



A carrier for suture devices, which consist of preassembled suture needles and threads, includes an elongated web of paper or other material having an end strip of heavy paper or

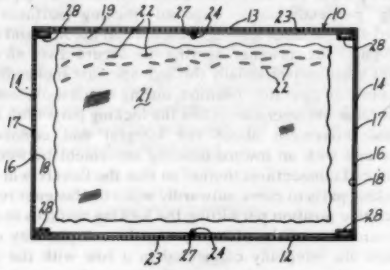
cardboard resistant to needle puncture. Parallel side-by-side rows of tabs are formed in the web by cutouts from the web material which remain attached along one side of the cutout opening to form a hinge. These tabs are lifted or displaced to receive and confine the extended thread of the suture device with the suture needle overlying the heavy end portion; and the tabs are then replaced within the cutout openings to retain and confine the suture threads in side-by-side parallel alignment at longitudinally spaced intervals. A transparent adhesive strip is placed over the needles on the heavier end strip to confine the needles and provide immediate visual identification of the type and size of needle. The packaging method includes: providing the web and heavy base; forming the tabs as above described; displacing the tabs while laying the extended suture threads over the web and replacing the tabs to confine the suture threads.

3,779,376

SHIPPING AND STORAGE CONTAINER FOR CASKET INTERIORS

Jerome A. Lewis, Irondale, Ala., assignor to Lewis Industries, Inc., Irondale, Ala.

Filed Feb. 28, 1972, Ser. No. 229,904
Int. Cl. B65d *85/16, 73/00*
U.S. Cl. 206—65 R **4 Claims**



A shipping and storage container for prefabricated and prepressed casket interiors adapted to be inserted in caskets without any further work on the interiors. The container has at least one openable end and a plurality of vertically arranged, slidable and accurately spaced panels. The casket interiors are removably attached to the sides of the panels so that by opening the end of the box and sliding a panel outwardly, a selected casket interior may be removed from the panel. The container incorporates specific means for slidably positioning and holding the panels. The two innermost panels are spaced far enough apart to permit casket interiors to be removably secured to adjacent surfaces of said panels.

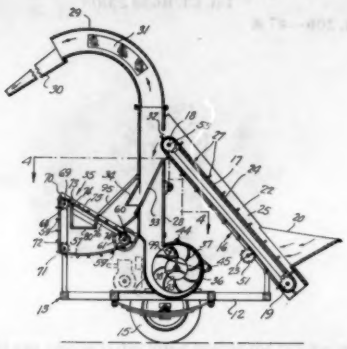
3,779,377

PECAN CLEANER

William D. Phelps, Little Rock, Ark., assignor to Phelps-Davis, Inc., Baton Rouge, La.

Filed May 5, 1972, Ser. No. 250,629
Int. Cl. B07b *9/00*
U.S. Cl. 209—36 **11 Claims**

A pecan separator and cleaner consisting of an inclined infeed elevator leading to a vertical air conduit supplied with upwardly moving air by a blower provided with a manually adjustable air intake port. As the harvested pecan material reaches the top of the infeed elevator, the pecans and heavier debris drop down to a second inclined elevator, the lighter residue material being blown upwardly to an outwardly directed discharge chute. The second inclined elevator overlies a grating which has a first part consisting of closely spaced rods through which light trash and faulty pecans drop by gravity. Beyond the first part of the grating is a second part having widely spaced rods through which acceptable pecans drop onto an inclined lateral chute leading to an inspection table.



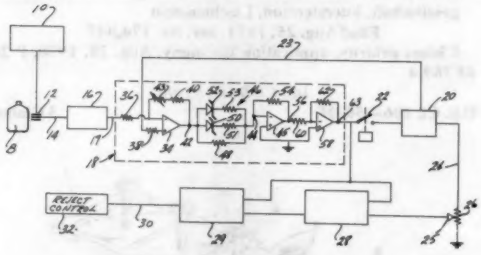
Elongated twigs and similar debris are discharged forwardly from the top end of the second elevator. The air intake port can be adjusted so that all material lighter in weight and less streamlined than acceptable pecans is transported upwardly by the upwardly moving air.

3,779,378

APPARATUS AND METHOD FOR LINEARIZING THE OUTPUT OF A NORMALLY NONLINEAR RADIO FREQUENCY THICKNESS GAUGE

Gerald F. Scherf, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 31, 1973, Ser. No. 328,453
Int. Cl. B07c *5/08*
U.S. Cl. 209—73 **5 Claims**



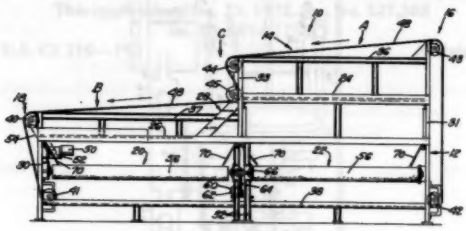
Apparatus and method for producing a linear voltage versus thickness output for a radio frequency glass thickness gauge. One type of thickness measuring device for glass containers uses the attenuation of a radio frequency signal as a measure of thickness. The thickness signal is a voltage which varies nonlinearly as a function of thickness. This invention is a circuit for linearizing the nonlinear thickness signal. The input resistance to an operational amplifier is varied as a function of the thickness signal voltage. This creates a variable gain for the operational amplifier and consequently results in the generation of a linear thickness versus voltage relationship. Zener diodes are used as nonlinear variable resistors in two different thickness ranges to give a nonlinear, variable, input resistance to the operational amplifier.

3,779,379

AUTOMATIC CORRUGATED WASTE PICKER

Robert I. Buchbinder, and Albert J. Buchbinder, both of West Covina, Calif., assignors to Devco Management Inc., New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,277
Int. Cl. B07b
U.S. Cl. 209—102 10 Claims



Mixed rubbish is dumped onto the first section of a sorting screen conveyor consisting of a plurality of laterally spaced, narrow conveyor belts or wires, with open spaces between them, through which small particles of trash fall. At the discharge end of the first section, trash is dumped onto the receiving end of a lower, second conveyor section, also consisting of laterally spaced, narrow belts, or wires. In passing from the first section to the second, trash falls freely through the air and tumbles onto the second section, causing thorough agitation of the trash and sifting of small particles through spaces between belts, leaving only bulky corrugated paper on the conveyor. Pickers stationed alongside the sorting screen conveyor manually remove unwanted material too bulky to pass between belts. Conveyor belts below the sorting screen conveyors remove small particle trash for disposal. In one embodiment of the invention, the belts or wires in each section diverge so that spaces between belts gradually open wider to pass larger particles of trash.

3,779,380

COLLECTOR COMPOSITION FOR ORE FLOTATION

William T. Bishop, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 12, 1971, Ser. No. 188,571
U.S. Cl. 209—166 13 Claims

Disclosed is a novel ore concentration process. The process involves the use of novel collectors in the flotation method for concentrating ore such, for example, as iron ore.

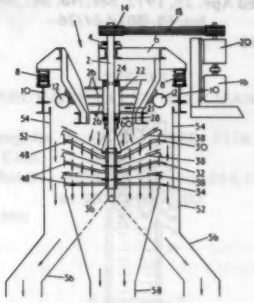
3,779,381

SIZING SCREENS

Michael Pearson Armstrong, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, Grosnensor, London, England

Filed July 27, 1971, Ser. No. 166,429
Claims priority, application Great Britain, Aug. 7, 1970, 38,130/70
Int. Cl. B07b *1/08*
U.S. Cl. 209—271 10 Claims

A sizing screen for particulate material of different sizes has a series of generally horizontal circular screen surfaces which are rotated about a vertical axis so that undersize material passes through the surface and is collected in central chute and oversize material is ejected from the periphery of the surface and collected in a peripheral chute. With the various embodiments described it is possible to retreat both the undersize and the oversize material, or solely the undersize material, or solely the oversize material.

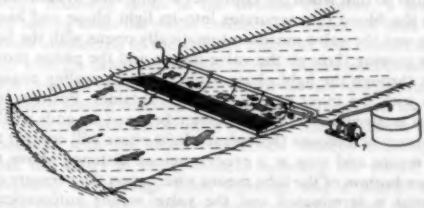


3,779,382

DYNAMICALLY EFFECTIVE OIL-GUIDE-BOOM AND METHOD FOR PURIFYING WATER EMPLOYING THE SAME

Hermanna R. Steltner, 5 Sparkes St., St. Catharines, Ontario, Canada

Filed Oct. 21, 1971, Ser. No. 191,264
Claims priority, application Canada, Nov. 2, 1970, 30651
Int. Cl. B01d *21/00;* E02b *15/04*
U.S. Cl. 210—83 9 Claims



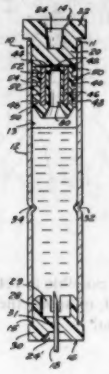
An oil-guide-boom which is effective in the removal of surface oil and residue from flowing water is disclosed. The boom includes two support members and a sheet extending between the supports in a trough-like manner. The sheet comprises a wire mesh material and a non-woven fabric. In operation the boom is placed in water toward the direction of flow so as to allow water to pass through the mesh portion of the sheet and to collect in the trough portion of the sheet. The boom has particular utility in that its structure and materials allow continuous removal of surface impurities from flowing water. Method of purifying water containing oil on the surface thereof utilizing the oil-guide-boom is also disclosed.

3,779,383

SEALED ASSEMBLY FOR SEPARATION OF BLOOD COMPONENTS AND METHOD

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Apr. 25, 1972, Ser. No. 247,386
Int. Cl. B01d *21/26*
U.S. Cl. 210—84 17 Claims



A self-contained fluid separator assembly is disclosed capable of separating blood into its component parts of plasma or serum, the light phase, and the cellular portion, the heavy phase. The assembly comprises a container having at least one open end for receiving blood for subsequent separation and a closure sealing the open end of the container, the closure being formed of a self sealing elastomeric material which is penetrable by a pointed hollow needle through which the blood to be separated is conducted into the container. A piston is slidably disposed in the container with its outer surfaces in sealing contact with the inner surfaces of the container. Pressure responsive valve means is provided on the piston which is normally closed when there is a minimum pressure differential on each side of the piston and the valve automatically opens in response to a substantial pressure differential so that when the container is subjected to centrifugal force the blood first separates into its light phase and heavy phase and the valve means automatically opens with the light phase passing through the valve means and the piston moves down through the light phase while retaining sealing engagement with the inner surfaces of the container. Positive stop means is provided on the container between its ends so that the piston as it moves through the light phase will contact the stop means and stop at a predetermined distance above the closure bottom of the tube means whereupon the pressure differential is terminated and the valve means automatically closes to provide an impervious barrier between the separated light and heavy phases of the blood.

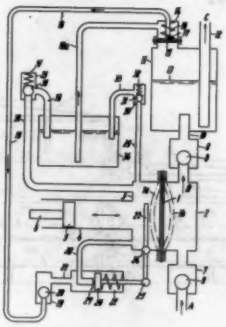
3,779,384

PRESSURE-REGULATED DIAPHRAGM PUMP

Friedrich R. R. Stahlkopf, Buchen, Germany, assignor to Otto A.P. Tuchenhagen, Buchen, Germany

Filed Jan. 17, 1972, Ser. No. 218,175
Claims priority, application Germany, Jan. 21, 1971, P 21 02 762.3
Int. Cl. B01d *35/26, 35/14*
U.S. Cl. 210—136 6 Claims

A piston-operated diaphragm pump for pumping liquids containing solids in suspension has a pump chamber divided into primary and secondary sides by a flexible diaphragm reciprocated by hydraulic pressure produced by a piston acting on a clean liquid in the primary side of the chamber. The solids-containing liquid from the secondary side of the pump is delivered via a closed tank to a treatment such as filtration. The clean liquid is circulated through a fluid circuit which includes a throttle valve operated by a rise in pressure in the closed tank, so that if the back-pressure of the solids-containing liquid rises above a predetermined level e.g., due to filter blockage, the flow of clean liquid in the fluid circuit is throttled and the amount of clean liquid in the primary side of the pump thereby reduced to effect a corresponding reduction in the delivery rate and pressure of the pump.

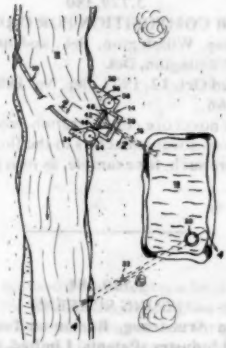


3,779,385

APPARATUS FOR REMOVING OIL AND OTHER FLOATING CONTAMINANTS FROM A MOVING BODY OF WATER

John W. Strohecker, Oak Ridge, Tenn., assignor to The United States of America, as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 30, 1971, Ser. No. 203,267
Int. Cl. E02b *5/08, 7/28*
U.S. Cl. 210—154 2 Claims



Floating contaminants such as oil and solid debris are removed from a moving body of water by employing a skimming system which utilizes the natural gravitational flow of the water. A boom diagonally positioned across the body of water diverts the floating contaminants over a floating weir and into a retention pond where an underflow weir is used to return contaminant-free water to the moving body of water.

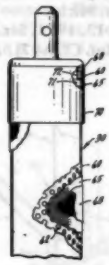
The floating weir is ballasted to maintain the contaminant-receiving opening therein slightly below the surface of the water during fluctuations in the water level for skimming the contaminants with minimal water removal.

3,779,386

FILTER CARTRIDGE

Leo F. Ryan, Somerville, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Division of Ser. No. 87,661, Nov. 9, 1970, Pat. No. 3,680,700.
This application Mar. 23, 1972, Ser. No. 237,568
Int. Cl. B01d 27/02
U.S. Cl. 210—193 3 Claims



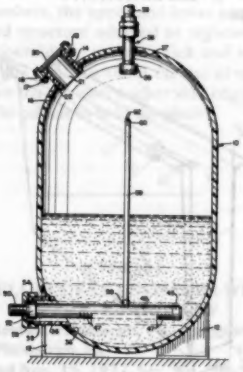
An improved precoat filter cartridge and a method of applying the precoat medium thereto. The filter cartridge comprises: a vertically extending tubular core element having apertures therein; a filter screen positioned about said core element to receive precoat particles; and a cover member closing off the upper portion of said core element defining a chamber formed by the sides thereof to accumulate gas trapped within said cartridge. A vent hole is provided in said cover member to permit the trapped gas to be vented therethrough.

3,779,387

FILTER

John J. Day, and Paul S. Hirschman, both of Fort Lauderdale, Fla., assignors to Ocean Protein Corporation, Dania, Fla.

Filed Oct. 20, 1971, Ser. No. 190,756
Int. Cl. B01d 29/10
U.S. Cl. 210—232 7 Claims



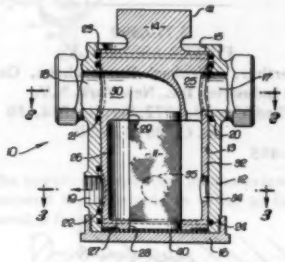
A filter having a container made of a substantially inert material which has fittings fastened thereto. Various operating portions of the filter are attached to the fittings in a way such that they can be easily removed and access had to the interior of the filter container for cleaning the container or charging it with a fluid medium.

3,779,388

STRAINER SHUT-OFF VALVE WITH MANUAL BACK-FLUSH

Donald W. Coughlin, P. O. Box 2025, 3170 State St., San Bernardino, Calif.

Filed Dec. 30, 1971, Ser. No. 214,157
Int. Cl. B01d 35/02
U.S. Cl. 210—390 8 Claims



The valve body provides a cylindrical bore rotatably confining a cylindrical rotor, the body having fluid inlet and outlet connections for interposing the valve in a domestic water service line just outside the water meter, and a drain connection leading to the waste system. Concentrically embodied in the rotor is a strainer chamber enclosing a cylindrical screen. Valve passages are provided in said rotor whereby: one setting of this rotor closes the drain connection and causes water to flow from the inlet connection to the strainer chamber and from the interior of the screen to said outlet connection thereby retaining solids in the strainer chamber; a second rotor setting shuts the outlet connection, leaves the inlet connection connected to the strainer chamber and connects the latter with the drain connection thereby flushing accumulated solids from the strainer chamber under service line pressure; a third rotor setting shuts the inlet connection, connects the outlet connection with the strainer chamber and leaves the latter connected with the drain connection thereby draining to waste the water in the premises, including the meter, and preventing ice damage from freezing; and a fourth rotor setting reverses the direction water entering from the inlet connection takes in its flowing through the screen, thereby cleaning fibrous matter from the exterior of the screen and flushing this to waste.

3,779,389

MOLTEN METAL FILTER

William D. Fant, Spokane, Wash., assignor to Fibrous Glass Products, Inc., Spokane, Wash.

Filed Sept. 5, 1972, Ser. No. 286,225
Int. Cl. B01d 23/04
U.S. Cl. 210—474 2 Claims

A bag-shaped filter is described for removing solid con-

taminates from molten metal, particularly aluminum. The bag is constructed from a rectangular piece or sheet of woven glass

fiber cloth. The bag is constructed with the edges of the cloth folded and secured to the inside of the bag.

3,779,390

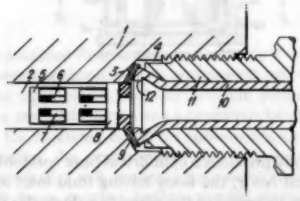
FILTER ASSEMBLY

Heinrich Oberthur, Offenbach-Rumpenheim, Germany, assignor to Itt Industries, Inc., New York, N.Y.

Filed May 18, 1972, Ser. No. 254,450

Int. Cl. B01d *29/30*

U.S. Cl. 210—495 **2 Claims**



A filter assembly including a cylindrical wire mesh having a cylindrical apertured plastic cage therearound. The mesh is embedded in the plastic for support.

3,779,391

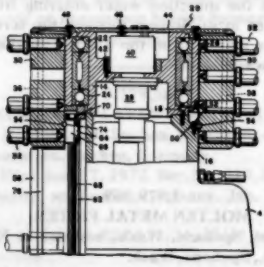
TOOL CHANGER FOR MACHINE TOOL

Yoshikazu Sato, No. 1,026, 4-Chomo, Shimotakaido, Suginami-ku, and Makoto Sato, No. 1-10, 1-Chomo, Nakano, Nakano-ku, Tokyo, both of Japan

Division of Ser. No. 804,220, March 4, 1969, Pat. No. 3,715,801. This application June 1, 1971, Ser. No. 148,910

Int. Cl. A47f *3/08*; B23q *3/18*

U.S. Cl. 211—1.5 **3 Claims**



A tool changing mechanism for a machine tool having a horizontal spindle. A rotatable magazine is provided with a plurality of guides for supporting and guiding a plurality of tool cartridges. Each cartridge is provided with a plurality of vertically aligned tools. The magazine is indexed to align a selected cartridge with a transfer station. The cartridge is shifted into the transfer station and is positioned to present a selected tool to a transfer mechanism for removal of the tool and insertion into the spindle. The tool is returned to the cartridge by the transfer mechanism after use. A tape controlled motor means coordinates the operation of magazine, cartridges, and transfer mechanism to provide for returning one tool while another tool is operating on the work.

3,779,392

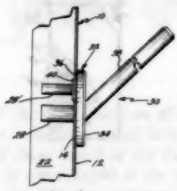
LABORATORY DRAINBOARD

Paul J. Betts, Sr., Muskegon, Mich., assignor to Browne Morse Company, Muskegon, Mich.

Filed Sept. 13, 1971, Ser. No. 179,660

Int. Cl. A47j *5/08*

U.S. Cl. 211—75 **1 Claim**



A lightweight laboratory drainboard formed from sheet material includes a hook shaped lip on the upper edge for mounting the board to wall-mounted clips. The board includes rearwardly extending side edges for holding the board in approximate parallel relationship with respect to the wall, and an outwardly extending lower lip to facilitate the drainage of fluids from wet laboratory glassware mounted on pegs affixed to the board. The pegs include stud portions which extend through apertures in the face of the board and collar portions which abut the board on the front surface thereof. Slip nuts slide over the studs from behind the board and abut the rear surface of the board to firmly hold the pegs in place.

3,779,393

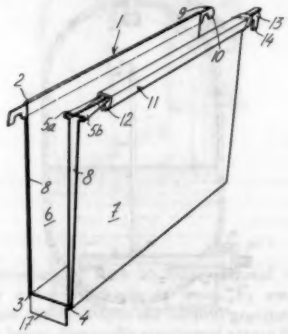
FILE FOR DOCUMENTS AND THE LIKE

Carl Erik Grundell, Osmagatan 8, Enskede, Sweden

Filed Aug. 11, 1971, Ser. No. 170,784

Int. Cl. A47f *3/14*

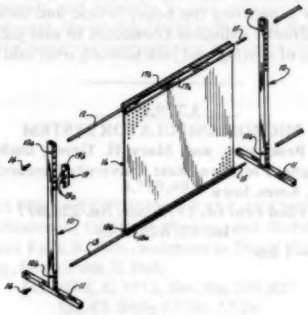
U.S. Cl. 211—126 **6 Claims**



A file for documents and the like comprises a double envelope, obtained by folding a rectangular sheet of a thin but

relatively rigid material such as cardboard along a folding line parallel to its short sides and located near the middle of the long sides and then folding the composite sheet along at least one additional folding line to provide a bottom. The free ends of the superimposed sheet parts are connected to a first suspension bar while a second suspension bar is introduced between the two sheets parts and adapted to bear against the first-mentioned fold thereof.

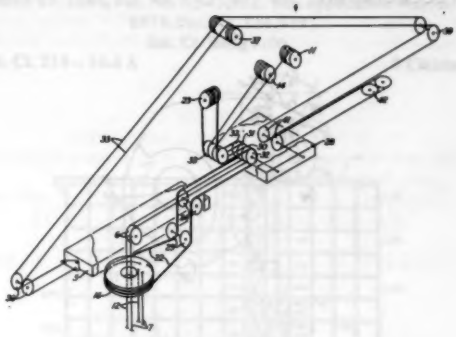
3,779,394
STORE DISPLAY FIXTURE ASSEMBLY
Melvern O. Bard, Shawnee Mission, Kans., assignor to Western Auto Supply Company, Kansas City, Mo.
Filed Dec. 13, 1971, Ser. No. 207,132
Int. Cl. A47f *5/00*
U.S. Cl. 211—134 **3 Claims**



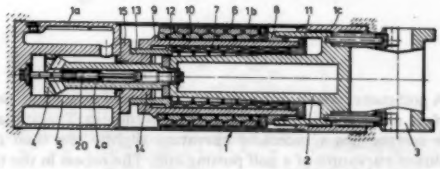
A plurality of spaced parallel uprights, self-standing or wall-assisted, are connected in series by rod-like cross members having hollow interiorly-threaded end portions which receive bolt-like members passed through the uprights. The uprights are slotted for reception of shelf support brackets. Pegboard or solid panels are fitted between the uprights and supported by the cross members, the upper and lower panel edges having specially formed structure adapted to register with the cross members and operable to permit quick and easy installation and removal of the panels without the use of tools. Stabilizing clips mounted on the uprights anchor side edge portions of the panels to hold the panels to hold the plane.

3,779,395
CLAMSHELL BUCKET UNLOADER WITH ROPE OPERATED TROLLEY
Howard E. Dykeman, Pittsburgh, Pa., assignor to Heyl & Patterson, Inc., Pittsburgh, Pa.
Filed Nov. 15, 1972, Ser. No. 306,919
Int. Cl. B66c *1/16*
U.S. Cl. 212—81 **8 Claims**

A boom extending horizontally away from a tower supports a trolley that can be moved along the boom and that supports a turntable, below which there is a clamshell bucket supported by means attached to the turntable. Operating means, supported by the tower, control rope means extending from the tower out around the turntable in order to turn it and the bucket suspended from it.



3,779,396
HYDRAULIC BUFFERS
Erich Zielinski, Gruiten, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany
Filed Mar. 30, 1972, Ser. No. 239,668
Claims priority, application Germany, Apr. 17, 1971, P 21 18 655.0
Int. Cl. B61g *9/08*
U.S. Cl. 213—43 **2 Claims**



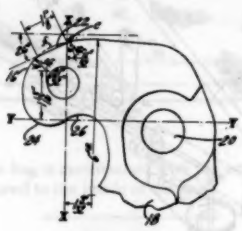
A hydraulic buffer device of the type in which a piston is slidable in a cylinder and has a throttle aperture which is controlled by a regulating pin whose cross section varies along its length. The throttle aperture is closable by a valve member which is spring loaded into the closing position. On rapid entry of the piston into the cylinder the valve member is unsealed and a relatively low resistance to piston travel is afforded. On slow entry of the piston into the cylinder the valve member remains seated and a relatively high resistance to travel of the piston is afforded.

3,779,397

RAILWAY CAR COUPLER

Kenneth Louis De Penti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 21, 1972, Ser. No. 246,415
Int. Cl. B61g *3/04*
U.S. Cl. 213—151 **6 Claims**



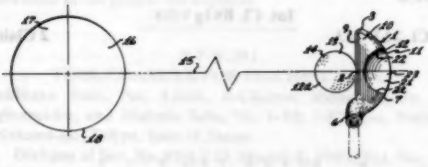
A railway car coupler of the knuckle type has the contour of its knuckle modified so as to increase the gathering range of the coupler, particularly during knuckle-to-knuckle engagement between two couplers as they come together for coupling from positions in which they are displaced laterally relative to one another.

3,779,398

GOLF PUTTER

James T. Hunter, 6239 W. Marshall, Glendale, Ariz.

Filed Feb. 26, 1971, Ser. No. 119,301
Int. Cl. A63b *53/00, 69/36*
U.S. Cl. 273—183 D **2 Claims**



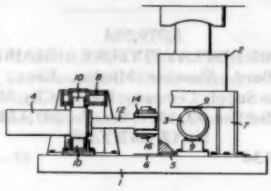
A golf putter wherein the club head includes an arcuate rear surface and a top surface having a recess therein. The arcuate rear surface has a radius of curvature slightly less than the radius of curvature of a golf putting cup. The recess in the top surface is generally in the shape of a semi-circle having a radius of curvature which is slightly greater than the radius of curvature of a golf ball. The semi-circular recess includes a bottom formed by an insert and opens into the rear arcuate surface whereby the club head may be inserted into a putting cup to scoop balls into the semi-circular recess for retrieving balls without stooping. A vertical plane bisecting the semi-circular recess and arcuate rear surface passes through the sweet spot on the front face of putter head, whereby the recess and rear surface facilitate aligning the putter head with the putting cup. The semi-circular recess includes substantially vertical side walls which the player can employ visually to assume substantially the same position relative the putter head each time the ball is addressed for putting and thereby supplement the kinesthetic training of the putting muscles.

3,779,399

ADJUSTING MECHANISM OF REMOVING HEAVY ARTICLE

Shuichi Shigeno, Sakura, and Masayoshi Ishii, Gifu, both of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha; Nihon Koki Kabushiki Kaisha, Minata-ku, Tokyo and Nippon Kokan Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Filed Dec. 30, 1971, Ser. No. 214,114
Int. Cl. B66f *3/24*
U.S. Cl. 214—1 R **4 Claims**



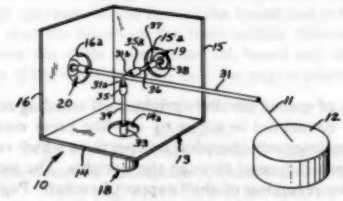
A mechanism for moving heavy articles such as blocks for use in constructing vessels, buildings or the like, for example, both vertically and horizontally by means of a vertically moveable jack for supporting the heavy article and slideable on a base and hydraulic cylinders connected to said jack and said base, capable of moving said jack laterally over said base.

3,779,400

MICROMANIPULATOR SYSTEM

William H. Brockman, and Mary H. Greer, both of Ames, Iowa, assignors to Iowa State University Research Foundations, Inc., Ames, Iowa

Filed Feb. 14, 1972, Ser. No. 225,877
Int. Cl. B25j *3/04*
U.S. Cl. 214—1 BB **2 Claims**



A system for manipulating tools or samples over very small distances uses orthogonally-oriented linear electromechanical transducers connected to a tool by means of a bendable linkage to control the position of the tool. A control stick is connected to three linear potentiometers, and when it is moved by an operator in a desired direction, the potentiometers are positioned to generate signals to control their associated electromechanical transducers such that the tool or the sample moves in the desired direction, also.

3,779,401

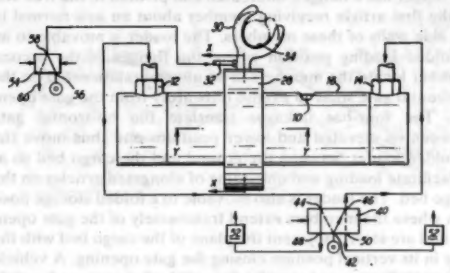
PNEUMATIC DEVICE FOR MOVING ARTICLES

George Carroll, 12 Palmerston, Stockport, England

Filed Feb. 17, 1972, Ser. No. 227,570
Claims priority, application Great Britain, Feb. 18, 1971, 4,890/71
Int. Cl. F01b *1/00*
U.S. Cl. 214—1 BB **8 Claims**

A device for moving articles comprising a cylinder of non-ferrous material, a piston including a magnet movable within

said cylinder, means for controlling the admission of pressure fluid to the cylinder for moving said piston and a body



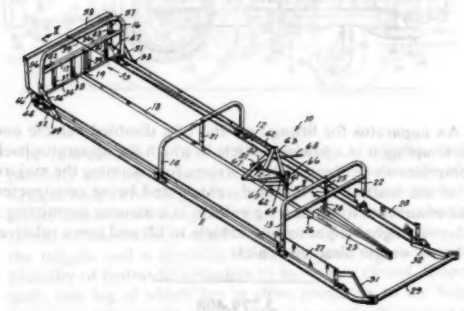
disposed outside and adjacent to said cylinder, said body including a magnet, the arrangement being such that movement of said piston causes a corresponding movement of said body.

3,779,402

AUTOMATIC GATE FOR HAY BALE ACCUMULATOR

Gary L. Erlenbusch; Calvin N. Hansen, and Richard H. Mott, all of Sioux Falls, S. Dak., assignors to Du-Al Manufacturing Company, Sioux Falls, S. Dak.

Filed Oct. 2, 1972, Ser. No. 294,027
Int. Cl. B65g *67/00, 57/20*
U.S. Cl. 214—6 B 8 Claims



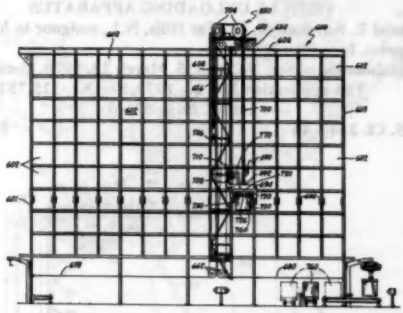
An automatic gate for a hay bale accumulator which includes a control arm mounted to pivot about a substantially horizontal axis as bales of hay are alternately received in the accumulator until such time that feeler arms attached to the control arm are prevented from rotating about a horizontal axis because the bale accumulator is substantially full. At this time the control arm moves upwardly about a horizontal axis at right angles to the first axis so as to actuate a trip arm to trip the latch of a tailgate so as to allow the bales to be unloaded.

3,779,403

CONTAINER STORAGE AND HANDLING APPARATUS

Robert R. Young, Danville, Calif., assignor to Kaiser Industries Corporation, Oakland, Calif.

Division of Ser. No. 842,158, July 16, 1969, Pat. No. 3,630,402, which is a continuation-in-part of Ser. No. 717,174, March 29, 1968, Pat. No. 3,543,952. This application Mar. 8, 1971, Ser. No. 121,979
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A 5 Claims



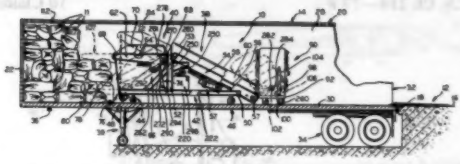
Apparatus for handling large heavy containers and similar loads and especially for transferring the same among the compartments of a vertical array of compartments and a separate transfer station and more particularly a crane for picking up and depositing such loads outside of a compartment, for inserting such loads into the compartments and depositing the same therein, and for picking up the loads within the compartments and removing the same therefrom.

3,779,404

APPARATUS FOR LOADING MAIL BAGS INTO A HIGHWAY VEHICLE

Joseph E. McWilliams, 1345 Canterbury Ln., Glenview, Ill.

Filed July 27, 1972, Ser. No. 275,790
Int. Cl. B65g *67/08*
U.S. Cl. 214—41 11 Claims



The invention relates to loading of mail bags from a loading dock into an end loading highway vehicle to fully and completely load the vehicle, in which a wheeled frame is provided with an upright support on which is mounted a forward conveyor section for swinging movement about a horizontal axis adjacent its rearward end for elevational distribution of the mail bags, and that carries a high speed bag propelling belt conveyor. Associated with the wheeled frame is a second conveyor section having its forward end approximating the elevation of the rearward end of the first conveyor section, and hav-

ing its rearward end at an elevation for convenient manual loading of mail bags thereon. The second conveyor section includes a belt conveyor operating at a lower speed for conveying mail bags received thereon to the high speed propelling conveyor. Both conveyor sections have dimensions transversely thereof that substantially span the transverse dimension of the vehicle loading area, and several ways are disclosed for supplying mail bags from the loading dock to the belt of the second conveyor section, either in single bag form or in multiple bag form.

3,779,405

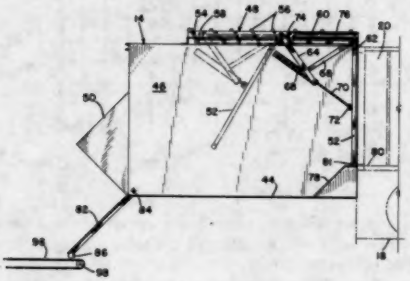
VEHICLE UNLOADING APPARATUS

Daniel E. Kavanaugh, Jr., Far Hills, N.J., assignor to Mail Express, Inc., Elizabeth, N.J.

Continuation of Ser. No. 21,835, March 23, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,752

Int. Cl. B65g *67/40*

U.S. Cl. 214—46 **8 Claims**



Apparatus for unloading material from a vehicle supported upon a platform tilted to a desired elevation by a fluid ram. The flow of material from the vehicle into a receiver and subsequently to a take-away conveyor assembly is regulated by a gate member mounted for pivotal movement as well as longitudinal displacement within the receiver.

3,779,406

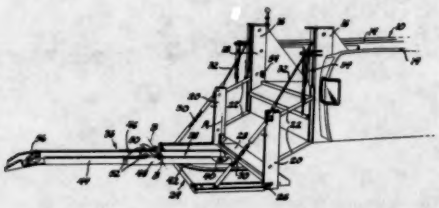
VEHICLE CARGO BED LOADER FOR ELONGATED ARTICLES

Christof Hermann, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 28, 1972, Ser. No. 292,967

Int. Cl. B60p *1/44*

U.S. Cl. 214—77 P **10 Claims**



A vehicle includes an elevated cargo bed accessible through a generally rectangular gate opening selectively closed by a generally rectangular gate which supports a loader for elongated articles. The gate is pivotally mounted by support members for movement about a transverse vehicle axis between a vertical position closing the gate opening and an elevated horizontal position generally aligned with the plane of the cargo bed. Four-bar linkages mount the support members so as to move the horizontal gate between the elevated position and a lower position adjacent ground level. The loader includes a first channel-shaped article receiving member with one end pivoted to the upper side of the horizontal gate at a central portion thereof adjacent the pivotal axis of gate movement. A second channel-shaped article receiving member of the loader has a flanged bifurcated end pivoted to the free end of the first article receiving member about an axis normal to the side walls of these members. The loader is movable to an unfolded loading position where the flanges of the second member locate the members in an alinged relationship on the horizontal gate so as to extend outwardly from the gate opening. The four-bar linkages translate the horizontal gate between its elevated and lower positions and thus move the unfolded loader between the ground and the cargo bed so as to facilitate loading and unloading of elongated articles on the cargo bed. The loader is also movable to a folded storage position where the members extend transversely of the gate opening and are stored adjacent the plane of the cargo bed with the gate in its vertical position closing the gate opening. A vehicle mounted flange engages the free end of the second article receiving member to automatically maintain the loader in the storage position during operation of the vehicle.

3,779,407

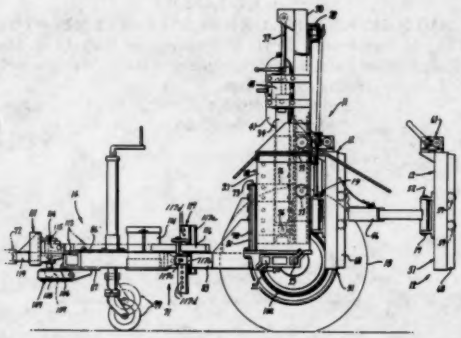
VEHICLE LIFTING AND TOWING APPARATUS

Luke D. Gillem, Orinda, Calif., assignor to Roger W. McCoy, Piedmont, Calif., a part interest

Filed May 24, 1971, Ser. No. 146,294

Int. Cl. B60p *3/12*

U.S. Cl. 214—86 A **6 Claims**



An apparatus for lifting one end of a disabled vehicle and for coupling it to a towing vehicle in which the apparatus itself comprises a wheel supported carriage for assuming the majority of the load of the disabled vehicle and being constructed and connected to the towing vehicle in a manner permitting a relatively light weight towing vehicle to lift and tow a relatively heavy weight disabled vehicle.

3,779,408

FRONT-MOUNTED SILAGE TILLER FOR A FRONT-END LOADER

Louis E. Ivie, 138 Jackson St., Lawrenceburg, Tenn.

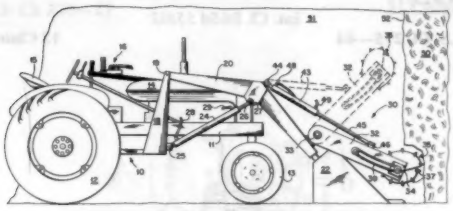
Filed July 10, 1972, Ser. No. 270,096

Int. Cl. E02f *3/70*

U.S. Cl. 214—145 **5 Claims**

A silage tiller for mounting on the front-end loader of a tractor vehicle, in which the front-end loader has a pair of loader arms pivotally mounted on the vehicle frame and supporting a loader bucket at the front ends of the loader arms. The silage tiller includes a pair of tiller arms pivotally mounted upon the loader arms on opposite sides of and projecting forward of the bucket. A rotary tiller head is rotatably mounted between the

front ends of the tiller arms, and a motor is mounted on the tiller arms for driving the tiller head. A linear motor is pivotally connected between the loader arms and the tiller



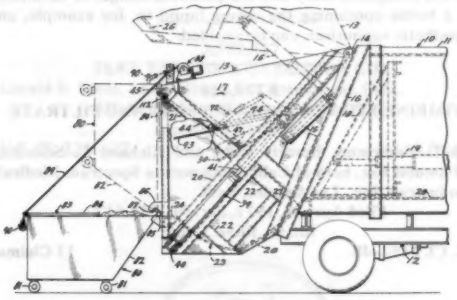
arms for swinging the tiller head from a lower position in front of the bucket for tilling silage in a trench silo to a raised inoperative position above the bucket.

3,779,409

CONTAINER DUMPING MECHANISM FOR A REAR LOADER REFUSE VEHICLE

William A. Herpich, and Donal W. Chaney, both of Galion, Ohio, assignors to Peabody Galion Corporation, Galion, Ohio

Filed Aug. 31, 1972, Ser. No. 285,536
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 **7 Claims**



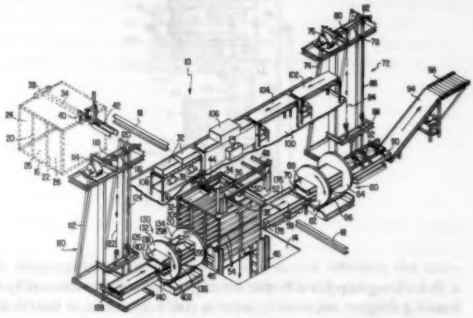
A rear-loading refuse vehicle having a tailgate that is pivotally mounted at its upper forward end to the rear of the vehicle body. The tailgate has a hopperlike bottom into which refuse is dumped through an open rear end that has a horizontal sill. A transversely-extending packer blade extends across the tailgate and is movably mounted within the tailgate by a plurality of hydraulic cylinders to move in a closed, loop-like path, one leg of which lies in close proximity to the hopper bottom and the return leg of which is in vertically spaced relationship above the hopper bottom. Means are provided for grasping, elevating, and tilting an open-top refuse container over the horizontal sill so that the contents of the refuse container are dumped into the tailgate. To facilitate the dumping action, a raking mechanism, comprising fork-like tines, is shiftably mounted on the packer blade and means are provided for projecting the tines into the interior of the elevated container as the packing blade approaches its rearmost position and for moving the tines downwardly and forwardly through the container to assist in discharging any compacted contents of the refuse container out of the container and into the tailgate, as the packer blade moves forward through the hopper.

3,779,410

MECHANIZED GUM BASE PAN UNLOADER

Michael Phillips, North Brunswick, and Victor A. Jurow, Freehold, both of N.J., assignors to L. A. Dreyfus Company, South Plainfield, N.J.

Filed Aug. 17, 1971, Ser. No. 172,451
Int. Cl. B65g *65/00*
U.S. Cl. 214—311 **22 Claims**



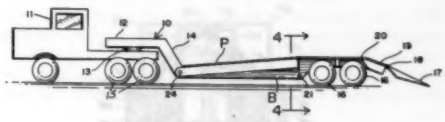
Disclosed is a machine for automatically unloading chewing gum base materials from cooling pans or trays. A carriage is indexed vertically into a pit in the factory floor and pans supported at their upper edges by flanges in the carriage have their undersides successively engaged by a chain conveyor supported on a table in the pit so that the pans are raised and propelled laterally by the conveyor out of the carriage. The pans are inverted, lifted and vibrated to separate the gum base from the pans. The pans are then coated with a release agent, reinverted and reloaded into the carriage as it moves upwardly out of the pit. The carriage is horizontally indexed so that several banks of pans may be unloaded, emptied and reloaded.

3,779,411

LOW BED TRAILER FOR HEAVY EQUIPMENT

Joseph G. Moretti, Jr., 2455 N.W. 6th St., Miami, Fla.

Filed Dec. 11, 1972, Ser. No. 314,235
Int. Cl. B60p *1/04*
U.S. Cl. 214—505 **2 Claims**



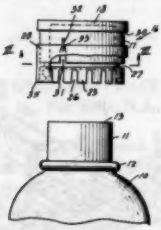
A low bed trailer for hauling heavy equipment having a horizontally disposed bed positioned at a substantially lower level than that of the rear loading platform and the gooseneck between which the bed is mounted; the bed having equipment supporting deck means pivoted at one end to the forward end portion of the deck and power operated lift means for raising the other end of the deck to the level of the rear loading platform whereby equipment may be rolled from the rear loading platform onto the equipment supporting deck; then the latter is pivoted downwardly to its horizontal and lowermost position to provide the equipment with a minimum overhead clearance and the combined trailer and equipment with the center of gravity thereof at absolute minimum of height above the ground for safe hauling.

3,779,412

LOCKING FINGER SEALED CAP

Joseph M. Kirton, 968 North 800 West, Woods Cross, Utah

Filed Sept. 8, 1971, Ser. No. 178,718
Int. Cl. B65d 55/02
U.S. Cl. 215—9 1 Claim



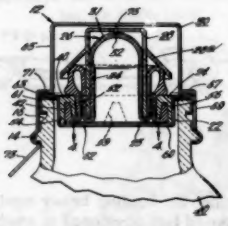
A locking cap for a bottle having a cap with downwardly extending fingers receivable over a rim formed on a bottle and including an annular slidable locking ring on the cap which when aligned with the cap in a first position is movable away from the flexible fingers so that they may flex outwardly and release the rim of the bottle and movable to a second position on the cap so as to substantially enclose the flexible fingers so that they cannot flex outwardly and the cap is locked to the bottle. A tongue and groove arrangement is formed between the ring and cap so that the ring may be moved from the locked to the unlocked position only when a particular orientation exists between the ring and the cap.

3,779,413

PRIMARY NURSER ASSEMBLY

Fred T. Pickerell, Royersford, and Dominic J. Brignola, Phoenixville, both of Pa., assignors to The West Company, Phoenixville, Pa.

Filed June 18, 1971, Ser. No. 154,505
Int. Cl. A61j 9/00
U.S. Cl. 215—11 C 18 Claims



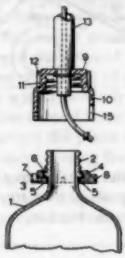
A primary nurser assembly for mounting over the opening in a container comprising a dam member spanning the opening and having a portion at least partially detachable to provide an access opening for discharge of the contents of the container, a nipple having a base portion overlying the dam, a pusher element engageable over the feeding tip of the nipple operable upon displacement toward said dam to partially detach said portion, and an outer cover assembly hermetically sealing said elements.

3,779,414

ANAESTHETIC SUPPLY

Wilfred Jones, Keighley, England, assignor to Cyprane Limited, Keighley, Yorkshire, England

Filed May 10, 1972, Ser. No. 252,114
Claims priority, application Great Britain, May 10, 1971, 14,023/71
Int. Cl. B65d 55/02
U.S. Cl. 215—44 13 Claims



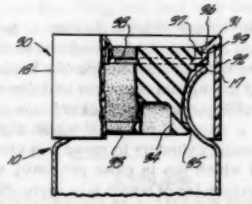
The specification discloses the combination of a bottle and a connecting cap therefor, both components having mating screw threads, the components having a mating key and keyway system extending axially of the bottle neck and being designed so that mating of the key and keyway system is necessary before relative rotation between the cap and the bottle to screw the cap onto the bottle is possible. Thus, a connecting cap can only be secured to a bottle if the bottle and cap are complementary and the potential danger of connecting a bottle containing the wrong liquid to, for example, an anaesthetic vapouriser, can be avoided.

3,779,415

COMBINED FILTER PAPER SUPPORT AND FILTRATE CONTAINER

Roy T. Eddleman, Beverly Hills, and Richard L. Schmitz, Diamond Bar, both of Calif., assignors to Spectrum Medical Industries, Inc., Los Angeles, Calif.

Filed Apr. 29, 1971, Ser. No. 138,617
Int. Cl. B65d 39/00
U.S. Cl. 215—48 11 Claims



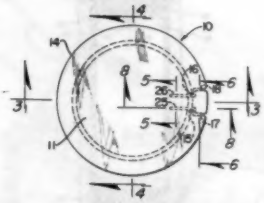
A container capable of functioning as a combined filter paper support and filtrate holder is disclosed which comprises a self-standing body portion which narrows into a neck area which in turn flares outwardly to the upper lip. The size of the neck area and flared portion are selected so that they are capable of supporting a conical filter medium such as a folded piece of filter paper. The container is further adapted to be tightly closed by a flexible stopper having an exterior, downwardly extending protective skirt which extends over the lip area as well as the outside of the neck and flared portions.

3,779,416

FLEXIBLE SEALING CLOSURE WITH FRANGIBLE SECTION

Henry O. Wilcox, Lakewood, Colo., assignor to Denver Plastics, Inc., Lakewood, Colo.

Filed Nov. 15, 1971, Ser. No. 198,715
Int. Cl. B65d *17/00, 45/00*
U.S. Cl. 220—27 11 Claims



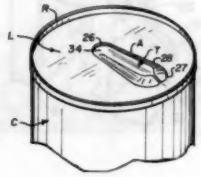
A flexible sealing closure for an opening in the wall of a container, such as in the top closure wall of bulk containers for milk, includes a cover portion having a pull tab forming an outwardly projecting extension thereof and a flange portion depending from one side of the cover portion. The flange portion has a circumferentially continuous surface with an intermediate annular sealing ring portion and a lower annular holding lip portion. Weakened sections in the closure are provided by reductions in wall cross section which are located in such a way as to insure that the pull tab breaks away from the flange and tears away a part of the cover portion along shear line portions upon the application of a pulling force to the pull tab to provide a hole of a selected size in the cover portion.

3,779,417

FLEX TAB FOR A GATED CAN LID

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo.

Filed Feb. 14, 1972, Ser. No. 225,920
Int. Cl. B65d *17/00*
U.S. Cl. 220—27 15 Claims



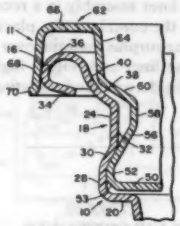
The invention concerns a gated can lid having a tab therein defined by a score line, to be pushed into the can as the metal neck between the tab and the lid at the score line is severed. The tab is dished upwardly to a convex form which may be flexed, by pushing, to a downward concave form with the periphery of the tab hinging about the metal neck at the score line as the flexing occurs. A disruption, such as a crease, is formed across the score line at a selected point to cause a positive rupture of the metal neck at the score line as the tab is pushed from the convex to the convave position, such rupture initiating and facilitating the tearing away of the tab from the can lid as the tab is then pushed inwardly into the can.

3,779,418

DISPOSABLE PLASTIC CONTAINER AND COVER

Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed Nov. 8, 1971, Ser. No. 196,567
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R 4 Claims



A disposable plastic container and cover wherein the container has an upwardly and outwardly flaring side wall and a rolled rim at the top. The container has an external lower shoulder in the side wall spaced below the rim and an undercut portion that joins the rim region with the external shoulder. An inwardly concave wall section joins the crown of the rim with the top of the undercut portion. The lid includes a bead which engages the undercut portion of the container and an upwardly and outwardly inclined upper inner shoulder which forms a seat for the bead of an identical lid when stacked on it. The upwardly and outwardly inclined upper inner shoulder which forms a seat for the bead of an identical lid when stacked on it. The upwardly and outwardly extending lid shoulder gives a low stack height to a lid stack, it cooperates with the inwardly concave face of the container side wall for a proper lid fit, and it centers the lid with the adjacent lid when nested.

3,779,419

HOLDER FOR FLEXIBLE RECEPTACLE LINERS

Charles T. Heitz, 7200 S.E. 92nd Ave., Portland, Oreg.

Continuation-in-part of Ser. No. 802,521, Feb. 26, 1969, abandoned, and a continuation-in-part of Ser. No. 768,395, Oct. 17, 1968, abandoned. This application Feb. 10, 1971, Ser. No. 114,325
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R 11 Claims

A holder having a hollow frame body member with a selected diameter whereby to seat on the top edge of a receptacle such as a garbage can. The holder has an upright portion arranged to lie along a vertical surface of the receptacle adjacent its opening. Some embodiments have an outwardly extending upper portion arranged to seat on the top edge of the receptacle. Also, some forms of the invention have a pair of

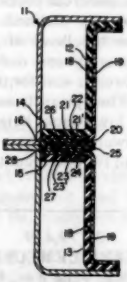
disconnected ends, and means are provided for receiving the disconnected ends and connecting them together. The body member is arranged to receive an upper portion of the liner up through the hollow center thereof and to have the upper portion of the liner folded over the outside of the body member, whereby upon supporting the body member on a receptacle the upper portion of the liner can be tucked inside the receptacle with the body member of the holder engaging a portion of the liner between it and the receptacle. A method of installing a holder and liner assembly in a receptacle comprises seating the holder on the container top, placing the liner in the receptacle and draping surplus material over the outside of the receptacle, raising the liner and holder high enough to tuck the surplus material inside, and then reseating the assembly.

3,779,420

FLUID CONTAINER

Ernest Knaus, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 13, 1971, Ser. No. 171,676
Int. Cl. B65d *25/16, 89/02*
U.S. Cl. 220—63 R **10 Claims**



A flexible fuel container having an outwardly projecting pinch seam around the peripheral outermost edges thereof. The seam is capable of extending or expanding in a direction normal to the direction of the projecting seam in order to provide increased fluid-holding capacity in the container. The flexible containers are particularly useful as vacuum-formed fuel containers which are disposed within vehicle fuel tanks.

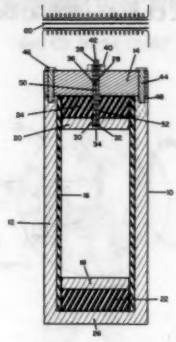
3,779,421

APPARATUS FOR CONTAINING HIGHLY CORROSIVE MATERIALS UNDER PRESSURE

Larry P. Brown, and Vaughan W. Rhoades, both of Tulsa, Okla., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 22, 1971, Ser. No. 191,663
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 **3 Claims**

An improved apparatus for containing highly corrosive materials under pressure. The apparatus is utilized in conjunction with a housing having a blind end machined in its bottom and an open end to which a top is connected. The improvement of the present invention comprises means for isolating the corrosive materials to be contained under pressure from the housing and forming a seal having increasing sealing ability in relationship with increasing pressures exhibited in the housing.

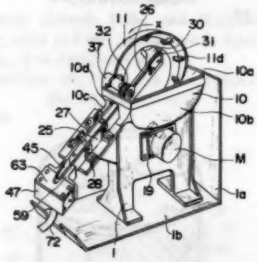


3,779,422

FASTENER FEEDING APPARATUS

Yubi Mori, Neyagawa; Tamoisu Tanaka, Hirakata; Shoji Hara, Neyagawa; Masakatu Iwashita, Kantano, and Yasuyuki Igaki, Tsuzuki-gun, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka-fu, Japan

Filed July 18, 1972, Ser. No. 273,020
Int. Cl. B23g *7/00*
U.S. Cl. 221—10 **15 Claims**



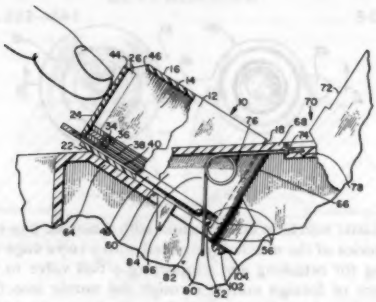
A fastener feeding apparatus for use in an operative association with a power operated fastening tool such as a screw driver or rivetting tool, which comprises a chute section including a rotary drum and a fastener receiving funnel, a drive section including an electrically operated motor for rotating the drum to scoop a plurality of fasteners upwardly from the bottom of the funnel, a chute section including a pair of spaced rails providing a track along which the scooped fasteners are downwardly guided, either rail being provided with a pair of spaced electrodes electrically connected with the drive section for controlling the supply of fasteners in response to the presence of the row of fasteners on the track, and an escapement section for successively transferring each of the fasteners from the track onto the power operated fastening tool.

3,779,423

PHOTOGRAPHIC SLIDE DISPENSER

Peter T. Quinn, Englewood, and Bruce W. Schroeder, Littleton, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 6, 1972, Ser. No. 215,728
Int. Cl. B65g 59/06
U.S. Cl. 221—186 10 Claims



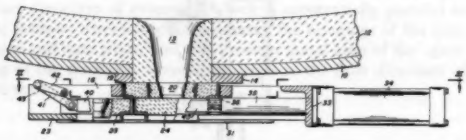
A slide dispenser including a slide box slidably supported in an inclined recess in a support member and having slots in the top and bottom front wall and rear bottom wall thereof. Detents on the box cooperate with spring means to allow limited sliding movement of the box while retaining the box in the recess. A slide pusher carried by the support member extends through the slot in the rear wall of the box and abuts against an edge of the bottom slide whereby sliding movement of the box causes the opposite edge of the bottom slide to be pushed through the slot in the bottom front wall of the box.

3,779,424

OPERATING MECHANISMS AND METHODS FOR SLIDABLE-GATE CLOSURES

Earle P. Shapland, Jr., Champaign, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 74,785, Sept. 23, 1970. This application Feb. 23, 1972, Ser. No. 228,597
Int. Cl. B22d 37/00
U.S. Cl. 222—1 23 Claims



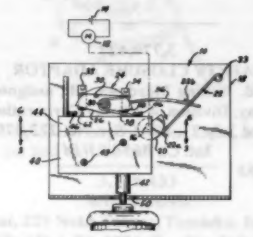
A mechanism for operating slidable gate closures on a bottom-pour vessel. The gates are individual blanks for closing the nozzle in the bottom of the vessel, or orifice gates for permitting pouring. Initially, the blank is positioned in line with the nozzle, while the orifice gate is supported temporarily in the space between the blank and a gate-pulling means. Gates can be loaded into this space without interference from the propelling means, which is located at the opposite side of the vessel. To start pouring, the two gates are pulled toward the propelling means to align the orifice gate with the nozzle and displace the blank. In one embodiment the two gates later can be pushed back along rails to return the blank into alignment with the nozzle to stop pouring, and the orifice gate can be removed or replaced without changing the blank. In another embodiment each time a new gate is pulled into alignment with the nozzle, the displaced gate drops from the mechanism.

3,779,425

PERIODICAL DISPENSER FOR AEROSOL CONTAINERS

Herbert S. Werner, Melville, N.Y., assignor to Mista-Matec Corporation, Lynbrook, N.Y.

Continuation-in-part of Ser. No. 851,389, Aug. 19, 1969, Pat. No. 3,610,471. This application Oct. 4, 1971, Ser. No. 186,242
Int. Cl. G01f 11/30
U.S. Cl. 222—70 14 Claims



In an actuator for periodically dispensing metered quantities of the contents of an aerosol container, a housing is provided having means for maintaining the valve stem of the aerosol container in an open position. A metering chamber, formed in the housing, is provided with first valve means that communicate with the interior of the aerosol container and the metering chamber. The housing is also provided with second valve means that communicate between the metering chamber and the atmosphere by means of a passageway. Means responsive to drive means having low power requirements are used to concurrently reverse the position of the first and the second valve means on a periodical basis, so that a metered quantity of the contents of the aerosol container is discharged into the atmosphere from the metering chamber when the second valve is open. The metering chamber is filled when the position of the valve means is reversed. Adjustable means are used to axially displace pins in the first and second valve means. In addition, an improved gasket is provided transversely of the valve pins for sealing the valve pins from the metering chamber and from the passageway.

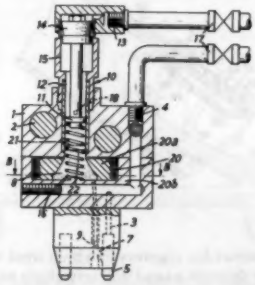
The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,779,426

ADHESIVE APPLICATOR

Roger Frederick Mawby, Bradford on Avon, England, assignor to C.I.C. Ralphs Limited, Bath, Somerset, England

Filed May 15, 1972, Ser. No. 253,563
Claims priority, application Great Britain, May 19, 1971, 15,879/71
Int. Cl. B67d 5/62
U.S. Cl. 222—146 11 Claims



An adhesive applicator for use in the lasting of shoes, the applicator including a reservoir for molten adhesive, an air

passage leading to a nozzle through which air under pressure is supplied, a pump for feeding molten adhesive into a moving air stream in the air passage, and means for feeding predetermined quantities of adhesive into the reservoir. In operation the applicator is so controlled that the desired quantity of adhesive is first fed to the reservoir, air under pressure is caused to flow through the air passage and nozzle and the pump is then operated to expel the desired quantity of adhesive into the air passage.

3,779,427

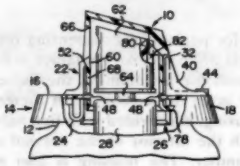
SAFETY CLOSURE ADAPTOR

Ronald F. Ewald, Rolling Meadows, Ill., assignor to Seaquist Valve Company, Division of Pittway Corporation, Cary, Ill.

Filed July 21, 1972, Ser. No. 273,879

Int. Cl. B65d *83/14*

U.S. Cl. 222—153 **13 Claims**



A childproof safety closure for an aerosol dispenser comprising a button depressor having a locking rim and arming lug arranged in cooperative relation with a mounting cup adaptor having a split locking ring wherein the locking ring and locking rim operatively engage each other to hold the button depressor out of operative engagement with the button actuator to prevent actuation of the dispenser when in the "locked"position and wherein rotation of the depressor and arming lug relative to the adaptor moves the locking ring out of operative engagement with the locking rim thereby "arming" the dispenser for actuation and on actuation the system automatically goes to the "locked" position.

3,779,428

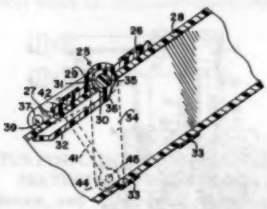
SEED CONTROL GATE FOR PLANTERS

Jack L. Bauman, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 13, 1971, Ser. No. 162,090

Int. Cl. F16k *1/20, 31/56*

U.S. Cl. 222—498 **9 Claims**



A seed dispenser for planters in which seed is fed by gravity from a hopper through a seed delivery chute to a device which meters the seed and discharges it to the planter furrow openers. A control gate is mounted in the seed chute and is movable from an open to a closed position to shut off the flow of seed to the metering device.

3,779,429

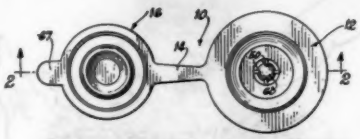
PLASTIC DISPENSING NOZZLE WITH A BALL VALVE

John C. Porcelli, Lincolnwood, Ill., assignor to Federal Tool & Plastics, a Division of VCA Corporation, Chicago, Ill.

Filed Dec. 17, 1971, Ser. No. 209,253

Int. Cl. B65d *5/72*

U.S. Cl. 222—500 **8 Claims**



A plastic nozzle in combination with a closure cap in which the interior of the nozzle is provided with a valve cage or valve housing for retaining and supporting a ball valve to prevent entrance of foreign matter through the nozzle into the container when the ball valve is in its normal seated position, but which permits the discharge and dispensing of the material in the container when the container and nozzle are tilted or inverted for pouring position.

3,779,430

WATER DISPENSER FOR SMALL ANIMALS

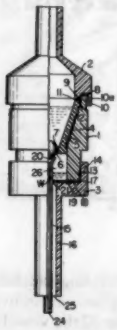
Motohiro Niki, 22-11, 2-chome, Yushima, Bunkyo-ku, Tokyo, Japan

Filed Aug. 15, 1972, Ser. No. 280,855

Claims priority, application Japan, Aug. 16, 1971, 46/62197; May 24, 1972, 47/50754

Int. Cl. B65d *25/44*

U.S. Cl. 222—501 **11 Claims**



A funnel securely mounted within a casing has a metal ball displaceably fitted in its bottom opening. A tube swingably supported by a rubber disk has its funnel-shaped upper end positioned opposite to the ball partly projecting out of the bottom opening of the funnel. When the tube is swung about the disk by the application of a force at its lower end, the funnel-shaped upper end of the tube lifts the ball by leverage, so that water stored in the funnel flows down into the tube. In another embodiment of the invention, the spacing between the ball and the funnel-shaped upper end of the tube is made adjustable to regulate the rate of water flow into the latter.

3,779,431

SLIDE CLOSURE MECHANISM FOR CASTING VESSELS FOR LIQUID METALLIC MELTS

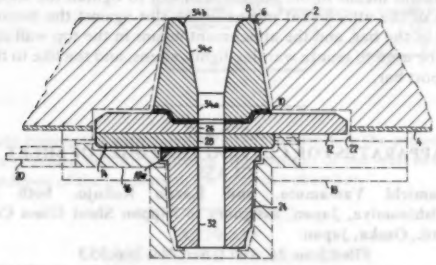
Bernhard Tinnes, Zollikon, and Hans Bieri, Pfaffikon, both of Switzerland, assignors to Metacon AG, Zollikon, Switzerland

Continuation of Ser. No. 42,299, June 1, 1970. This application Dec. 4, 1972, Ser. No. 311,742

Claims priority, application Switzerland, June 9, 1969, 8725/69

Int. Cl. B22d *37/00*

U.S. Cl. 222—561 5 Claims



A slide closure mechanism for casting vessels or the like, comprising a bottom block having a melt throughflow opening provided for the casting vessel, said throughflow opening including a substantially circular-shaped inlet portion. There are further provided a base plate, a movable slide plate and a discharge member cooperating with said bottom block. The base plate, movable slide plate and discharge member each have a respective opening for passage of the melt. The opening of the base plate communicates with the interior of the casting vessel via the throughflow opening of the bottom block. The opening of the base plate and the opening of the slide plate each possess a substantially elongate cross-sectional configuration, wherein the primary direction of extension of said base plate- and slide plate- openings is substantially transverse to the direction of movement of the movable slide plate. The opening of the discharge member and the opening of the bottom block likewise possess a substantially elongate cross-sectional configuration at least at the regions thereof directly neighboring the slide plate and base plate, respectively. The discharge member- and bottom block-openings at said neighboring regions likewise possessing a primary direction of extension which is substantially parallel to the primary direction of extension of the openings of the slide plate and base plate, and the cross-sectional area of the opening of the discharge member reduces in the flow direction of the melt.

3,779,432

METHOD OF AND APPARATUS FOR AUTOMATIC BAG REVERSING

Kenji Fukuta; Junichi Sekiguchi; Rihei Miyashita, all of Yokohama; Yoshihira Matsuzaki, Chigasaki-shi, and Yoshihiro Miura, Yokosuka-shi, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

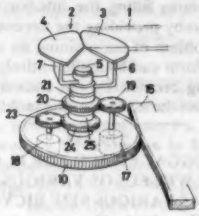
Filed Oct. 26, 1971, Ser. No. 192,459

Claims priority, application Japan, Oct. 27, 1970, 45/94563; Nov. 12, 1970, 45/99637

Int. Cl. A41h *43/00*

U.S. Cl. 223—39 2 Claims

This invention consists of clamping both ends of a bag with a pair of clamps each composed of two clamping plates for holding the respective ends of the bag between them from the inside and outside of the bag and rotating the pair of clamps in their respective inward directions with their clamping plates



holding the ends of the bag between them so that the bag is turned inside out and outside in.

3,779,433

WIG STAND

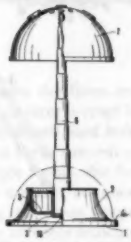
Sukeyoshi Imai, 229 Naka Takase, Tomioka, Japan

Filed Dec. 22, 1971, Ser. No. 210,664

Claims priority, application Japan, Apr. 9, 1971, 46/27394

Int. Cl. D06c *15/00*

U.S. Cl. 223—66 1 Claim



A wig stand having a top portion adapted to support a wig and mounted to a base portion by a telescoping shaft. The base contains a receptacle which surrounds the telescoping shaft and is covered by a cover having an aperture sized to receive said shaft. The top portion includes a plurality of smaller apertures through which pins may be pressed to fasten said wig to said stand as well as a plurality of larger apertures which have raised edges protruding upwardly from said top portion for engaging the underside of said wig and providing ventilation thereto.

3,779,434

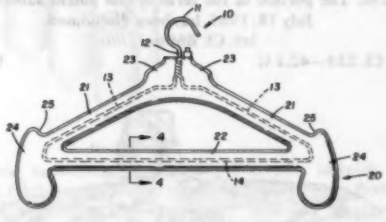
HANGER FORM

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio

Continuation-in-part of Ser. No. 183,409, Sept. 24, 1971, abandoned. This application Feb. 9, 1972, Ser. No. 224,890

Int. Cl. A47j *51/097*

U.S. Cl. 223—88 7 Claims



An inflatable form to be attached to a conventional wire coat hanger that includes two halves which can be joined together by adhesive means to completely encompass the conventional hanger, following which the form can be inflated to

provide support for clothing. The device is configured so as to provide support in the neck region of the garment as well as support in the shoulder regions. A modified form of the invention also contemplates filling the interior of the form with foam material, thereby providing the necessary support while eliminating the problem of maintaining an air-tight chamber. Alternatively, the form can be made entirely of foam with the outer surface being created by the smooth skin formed by molding contact with the surface of the mold.

3,779,435

UNIVERSAL LUGGAGE RACK FOR PLACEMENT ON CYCLES WITH WHEELS OF VARIOUS DIAMETERS, SUCH AS VARIOUS SIZE BICYCLES

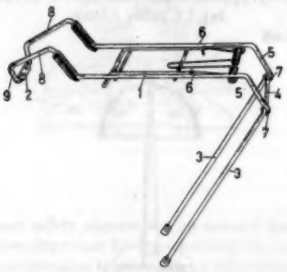
Heinz Niemann, Heresford, Germany, assignor to ESGE-Marby GmbH & Co., near Bielefeld, Germany

Filed Jan. 11, 1972, Ser. No. 217,066

Claims priority, application Germany, Jan. 13, 1971, G 71 01 034.9

Int. Cl. B62j *7/04*

U.S. Cl. 224—37 **5 Claims**



A frame forms a luggage support plane, the frame being formed either by parallel longitudinal bars, plastic walls or the like; one end of this support surface is adapted for attachment to the rear fork of a bicycle, the other end being formed with a downwardly extending projection. Support arms adapted to be attached at, or adjacent the axle of the rear wheels are hinged below the plane forming the support surface, at the downwardly extending projection, in such a manner and by such a distance that the arc described by the attachment end of the support arms, upon rotation or swinging movement over the hinge points, describes a circle which essentially includes the connection points for the luggage carriers of cycles made for various wheel diameters, while permitting folding of the arms into the carrier for transport when removed from a cycle.

3,779,436

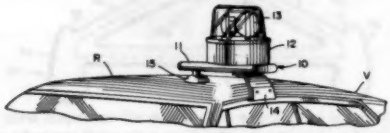
SUPPORTING BAR ASSEMBLY FOR VEHICLE

Oliver J. Burland, 214 Rugley Rd., Western Springs, Ill.

Continuation-in-part of Ser. No. 886,829, Dec. 22, 1969, Pat. No. 3,677,451. This application Feb. 17, 1972, Ser. No. 227,196. The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.

Int. Cl. B60m *1/00*

U.S. Cl. 224—42.1 G **9 Claims**



A supporting bar structure for a vehicle includes an elongated bar and a pair of end support means for supporting the bar above the roof of the vehicle. The bar includes substantially planar top and bottom surfaces, and at least one longitudinally extending T-shaped slot is provided in each of the surfaces. Attachment means are slidably received in each of the slots, and each attachment means includes shoulders which extend laterally outwardly beyond the edges of the slot to prevent removal of the attachment means therefrom. The bar is shorter than the width of the vehicle, and one of the support means includes clamping means for securing one end of the bar to the side of the vehicle roof which the other support means includes a suction cup for securing the other end of the bar to the vehicle roof. Each of the support means includes attachment means which are threadedly engageable with the attachment means in the bottom wall slot to tighten the shoulders of the attachment means in the slot against the bottom wall of the bar, and the attachment means in the top wall slot can be used to secure warning lights, sirens, and the like to the support bar.

3,779,437

APPARATUS FOR CUTTING THE EDGES OF SHEET GLASS

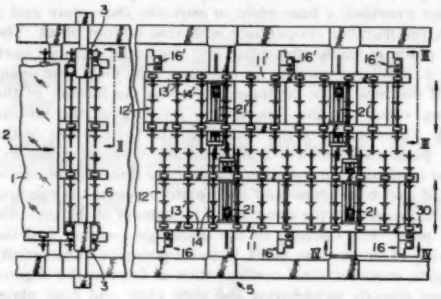
Yasumichi Yamamoto, and Kazuo Rokujo, both of Nishinomiya, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed June 26, 1972, Ser. No. 266,353

Claims priority, application Japan, July 6, 1971, 46/50112

Int. Cl. C03b *33/02*

U.S. Cl. 225—96.5 **9 Claims**



An apparatus for cutting the edges of a sheet glass, including at least two cutter means for providing cutting lines in the longitudinal direction at the desired positions across the glass sheet, two frames each having a conveyor for supporting the glass sheet and a break means for cutting the glass sheet along the cutting lines, and means for moving at least one of said frames so that said break means is in a predetermined relative position with respect to the cutting lines.

3,779,438

APPARATUS FOR MAINTAINING A PREDETERMINED RELATIVE POSITION OF A MOVING WEB OF MATERIAL AND AN ELEMENT

Erling Ingvar Nilsson, Lund, Sweden, assignor to AB Kelva, Lund, Sweden

Filed Apr. 11, 1972, Ser. No. 243,077

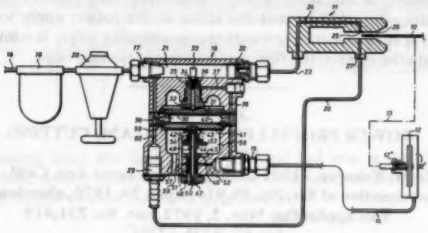
Claims priority, application Sweden, Apr. 14, 1971, 4798/71

Int. Cl. B65h *25/26*

U.S. Cl. 226—19 **6 Claims**

An apparatus for maintaining a predetermined position of a moving web of material in relation to an element comprises a pneumatic sensing means, and a control valve having a pressure chamber formed between two diaphragms. The pressure

in this pressure chamber is governed by a pressure signal supplied by the sensing means in dependence of the position of the web in relation to the element. The diaphragms are operatively connected with valve members controlling the pressure in a pressure box for adjusting the position of the web in dependence of the pressure in the pressure chamber.



3,779,439

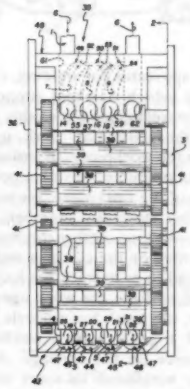
WEB GUIDING APPARATUS

Thomas C. Fessop, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1972, Ser. No. 258,591

Int. Cl. B65h *23/34*

U.S. Cl. 226—88 **6 Claims**



A web guiding apparatus is adapted for use with flexible web material (a) which has a longitudinal axis, two oppositely spaced longitudinal edges and a sensitive surface extending between the last-mentioned edges (b) and which when longitudinally bowed is generally resistive to transverse flexing. The apparatus guides such web material longitudinally along a multi-loop path having a series of parallel, path sections which are curved respectively about parallel, coplanar axes and individually have two spaced portions arranged in transversely offset relation. In the apparatus, a plurality of web guideways are provided for guiding such web material respectively along these path sections. Each of the web guideways has a web guiding surface which is contorted to longitudinally extend between the two, transversely offset portions of a respective one of the path sections. Also, since the web guiding surface is crosswise curved about the longitudinal axis of web material moving along the respective path section, and is longitudinally arched in substantially conformal relation with the curvature of the respective path section, the web guiding surface will abut only the two longitudinal edges of such a moving web so as to longitudinally bow the moving web without contacting the sensitive web surface and so as to support the same web for rotation about the longitudinal web axis.

3,779,440

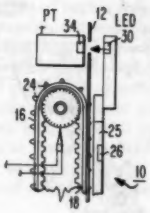
FORM RUN-OUT AND JAM DETECTOR FOR PRINTER

William R. Casale, Endwell; Fred Saltz, Binghamton, both of N.Y.; George R. Schreck, Montrose, Pa., and Emanuel V. Tomassini, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1972, Ser. No. 246,052

Int. Cl. G03b *1/30*

U.S. Cl. 226—74 **4 Claims**



An error counter counts the lines moved by a continuous form tractor. The error counter is reset by pulses generated by a detector connected to detect feed holes in the form as they pass. If the form jams, a form run-out occurs, or forms shingling occurs with multiple forms, the feed hole pulses are interrupted and the error counter advances to a predetermined error count, producing an error output signal to stop the machine and/or activate an error indicator.

3,779,441

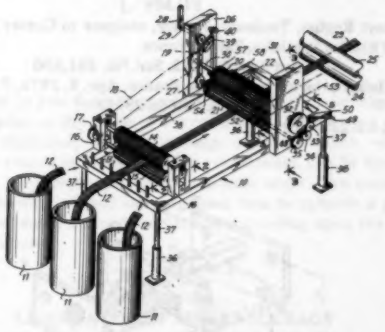
FABRIC TENSIONING APPARATUS

Henry Policella, 1826 Holland Ave., Bronx, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,270

Int. Cl. B65h *17/42*

U.S. Cl. 226—111 **6 Claims**



A fabric tensioning apparatus particularly suitable for synthetic fabrics, such as nylon and the like, having a first assembly of splined profile rollers for receiving lengths of crimped synthetic fabric and stretching this fabric under tension between a tripod assembly of rollers in a continuously moving manner so that the fabric can be fed directly to a cutting machine and cut to uniform lengths for use in carpets and the like.

3,779,442

FOIL TRANSPORT ARRANGEMENT IN HOT PROCESS EMBOSSING PRINTING MACHINES

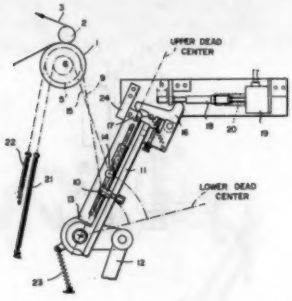
Roland Wetzel, Ziegelhausen, and Hugo Rambausek, Wiesloch, both of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 23, 1971, Ser. No. 201,435

Claims priority, application Germany, Nov. 25, 1970, P 20 58 058.9

Int. Cl. B65h *17/26*

U.S. Cl. 226—123 6 Claims



A foil transport arrangement in hot process embossing printing machines which provides intermittently acting forward pulls of the foil ribbon in different lengths and in a predetermined sequence. The various forward pulls are formed of several sequentially occurring normal forward pulls of a given length with a concluding longer forward pull. The invention permits the use of a large number of control steps by a plurality of oscillating elements which operate either singly or in combination, subject to automatic control by electrical impulses. The flexibility and control is largely obtained through the use of directional or free-wheeling couplings between a driven shaft and the forward pull assembly.

3,779,443

POSITIONING DEVICE FOR THE EDGE OF FLEXIBLE FILMS

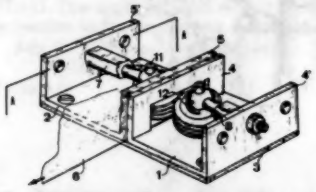
Robert Regipa, Toulouse, France, assignor to Centre National D'Etudes Spatiales, Paris, France

Filed Apr. 6, 1972, Ser. No. 241,600

Claims priority, application France, Apr. 9, 1971, 7112661

Int. Cl. B65h *23/32*

U.S. Cl. 226—199 3 Claims



The disclosure herein describes a positioning device for at least one edge of a flexible film intended to travel continuously under the action of driving means in order to be subjected to a pre-determined operation. Two adjacent guiding elements include two oppositely facing surfaces spaced apart by a distance slightly greater than the thickness of the film; abutment means are provided with a positioning edge parallel to the direction of movement of the film. At least one pair of rollers are arranged symmetrically on each side of the guiding elements and are each provided with a flexible rolling skirt between which the film edge is elastically gripped; the plane of rotation of the skirts is slightly oblique with respect to the positioning edge so that the skirts of the rollers apply to the film forces directed towards the positioning edge, tending to apply the edge of the film against the positioning edge.

3,779,444

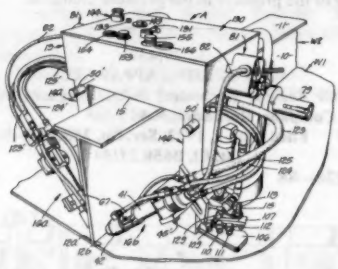
POWER PROPELLED WELDING AND CUTTING APPARATUS

Milo M. Kensrue, 11031 Cherryhill Dr., Santa Ana, Calif.

Continuation of Ser. No. 29,914, April 20, 1970, abandoned. This application Mar. 2, 1972, Ser. No. 231,419

Int. Cl. B23k *37/04*

U.S. Cl. 228—4 31 Claims



Power propelled apparatus for welding, cutting and similar work operations, in which a wheel supported carriage attached to an elongate workpiece is movably guided therealong while performing the particular work operation along a desired locus line on the workpiece, the attached carriage having driving elements operable into clamped driving engagement with a portion of the workpiece, for example, the web of an I-member or other structural member. Appropriate tool means, such as one or more cutting torches, welding torches or the like, are mounted on the carriage and are continuously automatically oriented so as to track the locus line during carriage movement and perform the work operation therealong. For arc welding use, the torch has a nozzle into which an appropriate gas is fed, together with a welding electrode wire supplied from a source on the carriage. Adjustable control means provides for variations to meet different operating requirements, and includes means for automatically stopping and shutting off the apparatus upon its reaching the end of the workpiece.

3,779,445

APPARATUS FOR PRODUCTION OF CONCRETE REINFORCEMENT LATTICE

Oskar Palmer, Rembrandtstrabe 25, Dusseldorf 4, Germany

Filed May 11, 1972, Ser. No. 252,477

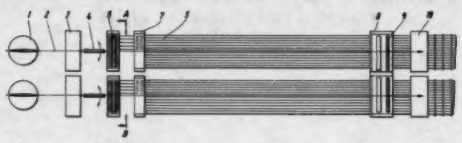
Claims priority, application Germany, May 12, 1971, P 21 23 501.8

Int. Cl. B23k *29/00*

U.S. Cl. 228—5 8 Claims

Apparatus for forming wire mats for reinforced concrete in which wire is drawn from a reel and successively direced to parallel, adjacent support tubes, the wire being successively cut after a predetermined length of the wire has been

deposited into a respective tube. The cut lengths of wire constitute the longitudinal wires of the mat, and these lengths are



advanced from the tubes as a unit and fed into a welding machine where transverse lengths of wire are welded to the longitudinal wires at points of intersection.

3,779,446

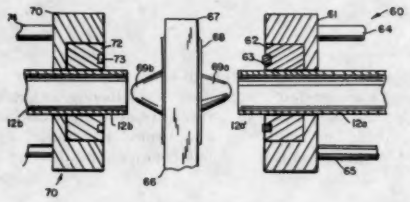
WELDING APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation of Ser. No. 797,899, Feb. 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 362,870, April 27, 1964. This application Oct. 13, 1971, Ser. No. 189,018

Int. Cl. B23k *37/00*

U.S. Cl. 228—15 **5 Claims**



A welding apparatus and method are provided which are particularly applicable to the welding of aligned and abutted sections of pipe and tubing. In one form, welding is effected by a spinning tool which heats and deforms portions of tube work members such as the flanged or abutted ends of tubing in a manner to weld same together. The apparatus and method are also applicable to the welding of shapes other than tubing.

In another form, the aligned ends of two tubes are simultaneously or sequentially automatically flared prior to the welding operation which involves abutting the flared end portions and welding same together by spinning or cold pressure welding apparatus.

3,779,447

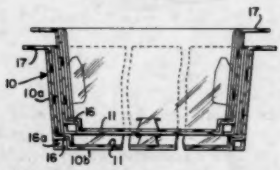
BOILABLE BAKEABLE PACKAGE AND METHOD

Robert P. Bemiss, Hillsborough, Calif., assignor to Robalex, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 83,704, Oct. 26, 1970, Pat. No. 3,715,853. This application June 21, 1971, Ser. No. 154,784

Int. Cl. B65d *15/22*

U.S. Cl. 229—14 B **10 Claims**



A laminated or multi-layer wall tray is provided which has a self-supporting outer layer or wall portion of paperboard which can be formed and handled as an independent self-supporting unit during manufacture of the laminated tray. A plastic liner is heat-vacuum formed into the paperboard tray or carton to provide a boilable, bakeable, liquid-tight, leakproof lining for the tray which in its entirety is of a boilable or bakeable character, and to provide a strengthened structure of the composite tray of the outer paperboard supporting structure and inner plastic film liner in supporting structure. Both the liner and the paperboard are preferably made of a thinness or caliper of a dimension less than can be normally employed in such structures when used alone. At the bottom the paperboard outer structure has certain formed indents around its bottom corner edge which provide resting portions or stops for nesting of the tapered trays to be handled as a stack, and also provide exit openings or vents for air from within the carton or tray at required positions to the outside during the thermo-vacuum forming of the liner. The method of fabricating or combining the components of such a tray comprises the steps of forming the outer paperboard structure or layer with the corners locked or secured together in self-supporting fashion to receive the plastic liner by thermo-vacuum forming process drawn inside of the self supported paperboard outer structure to correspond identically to the inner profile of the paperboard container thereby locking and if desired, adhering the molten plastic material to the inside paperboard structure. A laterally horizontally extending flange may be provided around the upper edge of either the paperboard or the plastic, or both.

3,779,448

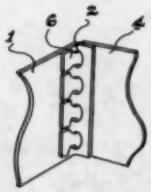
INTERLOCKING SEAM STRUCTURE

William A. Wootten, 425 Via Corta, Palos Verdes Estates, Calif.

Filed June 23, 1971, Ser. No. 155,781

Int. Cl. B65d *5/42*

U.S. Cl. 229—48 R **19 Claims**



A seam to join flat panels of paper board material edge to edge or edge to the plane of a second panel employing a pattern of alternately spaced openings and cuts which, when properly placed in an overlapping relationship, can be forced together by applying pressure to specific areas, thus causing an interlocking of said openings and cuts to achieve a permanent or easily opened connection depending upon the cut configuration.

3,779,449

LINEAR STRIP OF SEVERABLE BAGS

Hercules Membrino, 1934 Arch St., Philadelphia, Pa.

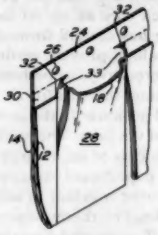
Continuation-in-part of Ser. No. 178,908, Sept. 9, 1971. This application May 5, 1972, Ser. No. 250,659

Int. Cl. B65d *33/00*

U.S. Cl. 229—66 **8 Claims**

A flexible bag or series of flexible bags connected in a strip, each bag having a selvage portion, this selvage portion being common to all the bags when in said strip. The bag or bags are connected to the selvage portion by a perforated line, there being an elongated slit in the perforated line adjacent the side edges of the bag. The bag or bags are each provided with an

open mouth defined by an upwardly extending portion of the rear wall thereof, this upwardly extending portion forming a lip. Each lip is connected to the selvage portion by means of the perforated line. When a bag is pulled laterally forward, the slits permit a portion of the rear wall to move into a transverse position forming side walls for the open mouth. The selvage



portion may be flat or tubular. When it is tubular, it is adapted to receive a supporting mandrel and is also optionally provided with apertures corresponding to optionally provided apertures in the mandrel, whereby pulses of gaseous or liquid fluid may be passed into the mouth of each bag to aid in opening the bag.

3,779,450

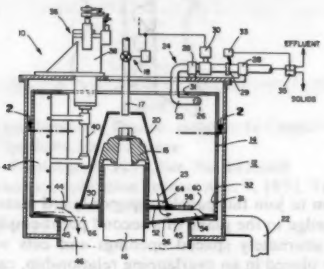
BASKET CENTRIFUGE

Leonard Shapiro, Upper Darby, Pa., assignor to Pennwalt Corp., Philadelphia, Pa.

Filed Mar. 29, 1972, Ser. No. 239,085

Int. Cl. B04b *11/00*

U.S. Cl. 233—21 **10 Claims**



A centrifuge which rotates about a vertical axis, has a driving hub, a feed cone supported on and surrounding the hub, and a bowl with a separation chamber therein. The improvement includes structure which supports the bowl and feed cone on the hub, while simultaneously closing the bottom of the feed cone and forming a plurality of enclosed passageways which extend from the bottom interior of the cone into the separation chamber; the passageways are symmetrically arranged around the axis, and mounted so as to rotate with the bowl. During operation of the centrifuge, a feed mixture is introduced into the top of the rotating feed cone, the mixture descending to the bottom interior thereof; from the bottom interior of the feed cone, the mixture enters the enclosed passageways where it is tangentially accelerated while being fed into the separation chamber.

3,779,451

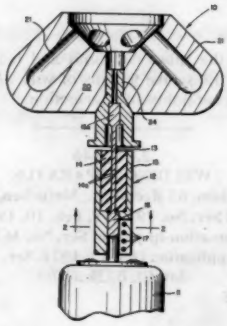
FLEXIBLE SHAFT STABILIZER

Ivan L. Lehman, Wellesley, Mass., assignor to International Equipment Company, Needham Heights, Mass.

Filed Nov. 22, 1971, Ser. No. 201,069

Int. Cl. B04b *9/14*

U.S. Cl. 233—23 A **4 Claims**



A flexible shaft construction to transmit rotational energy between a motor and a centrifuge rotor having a thin, long flexible shaft surrounded by a resilient sleeve and a stiff tubular member. The shaft, sleeve and tubular member are arranged so that there is no relative rotational motion between them.

3,779,452

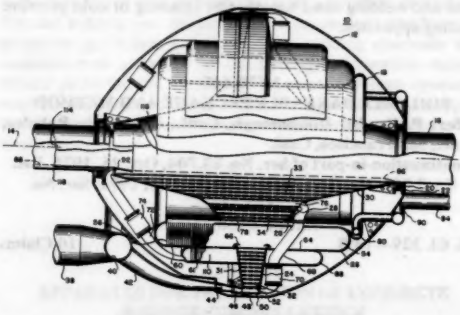
ROTARY SEPARATOR

Richard A. Nau, La Jolla, and Sterling A. Campbell, San Diego, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Sept. 22, 1960, Ser. No. 57,742

Int. Cl. B01d *45/12*

U.S. Cl. 233—32 **5 Claims**



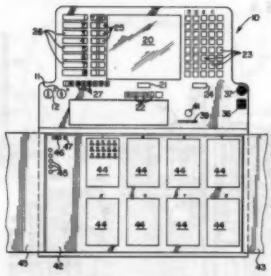
The disclosed apparatus is for separation of mixed gases through the combined action of distillation and centrifugal force. A rotor rotates a separator which includes means for condensing from a gas the less volatile of the mixed gases. The separating means comprises a plurality of sieve trays arranged concentrically around the axis.

3,779,453

ELECTRONIC VOTING MACHINE

James D. Kirby, Palos Park; Douglas R. Hetzel, Chicago; Richard H. McKay; James U. Snydacker, both of Wheaton, and Paul G. Ziebold, Chicago, all of Ill., assignors to Frank Thornber Co., Wheaton, Ill.

Filed July 7, 1972, Ser. No. 269,558
Int. Cl. G07c *13/00*
U.S. Cl. 235—54 F 7 Claims



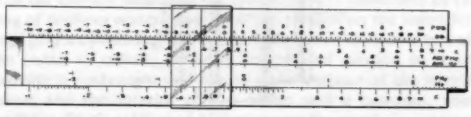
An electronic voting machine utilizing a video screen upon which the names of candidates or propositions to be voted are projected from an appropriate slide or other transparency, and utilizing actuating means coordinated with the projected names or propositions, and wherein the voting machine may be rendered operative by a voter's identification card, which is programmed to enable each voter to use the machine only in those areas and upon those propositions or candidates where the voter is authorized to cast a ballot. The machine incorporates solid state circuitry with means to indicate a malfunction, including a warning light and an audible beeping. Means are provided for straight voting, split ballot voting, straight voting with one or more cross-over votes, write-in voting, proposition voting, cancellation of a vote, and includes cumulative counting means as well as positive lock means to enable use of the machine only for authorized voting, and a party-selecting locking means for single party voting as in a primary election, whereby candidates may be voted upon in one party and all candidates from other parties are locked out.

3,779,454

SLIDE RULE FOR ELECTRONIC ANALYSIS

Jan Koren, Bridgeport, Conn., assignor to Raymond Lee Organization, Inc., New York, N.Y.

Filed May 1, 1972, Ser. No. 249,379
Int. Cl. G06g *1/02*
U.S. Cl. 235—70 A 2 Claims



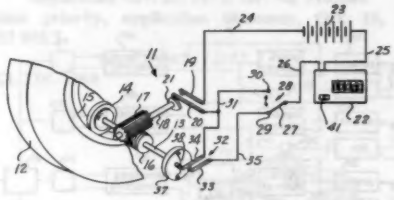
An improved slide rule containing new graduated scales for calculating from decibels, and nepers, directly into units of voltage, current, impedance, and power.

3,779,455

LIFTOFF AND LANDING DISTANCE INDICATOR

Edward E. Leibert, 2330 Hood Pl., Walla Walla, Wash.

Filed Feb. 9, 1973, Ser. No. 331,254
Int. Cl. G01c ; G06f
U.S. Cl. 235—95 10 Claims



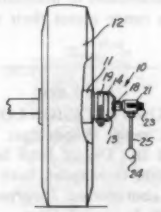
A liftoff and landing distance indicator consisting of a pulsing circuit driven by an aircraft wheel and including a switch mechanically operated by a flywheel having a lost-motion connection with the aircraft wheel. The switch is closed shortly after the aircraft wheel starts to roll and is opened as the flywheel backs off slightly as the aircraft wheel leaves the ground. Another switch is provided to close the pulsing circuit when landing. The pulsing circuit includes a counter whereby the sum of the pulses are recorded. In an alternative embodiment the aircraft wheel drives an alternating current generator connected through a divider and through normally closed contacts of a relay to the counter. The relay has an energizing circuit including an electronic switch which is controlled by an integrating circuit and a discharge circuit connected to the generator and arranged to energize the relay and open the counter circuit when the aircraft wheel leaves the ground.

3,779,456

MEASURING ATTACHMENT FOR MOTOR VEHICLE WHEELS

William W. Burnett, Rt. 1, Box 1275, Lincoln, Calif.

Filed Mar. 14, 1973, Ser. No. 341,088
Int. Cl. G01c
U.S. Cl. 235—95 3 Claims

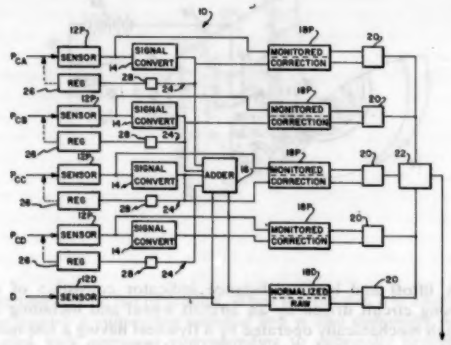


A measuring attachment for motor vehicle wheels which includes a revolution counter and a flexible clamp to clamp the counter to the rotating hub of a motor vehicle wheel. The counter shaft is rigidly secured to the clamp and the counter body is weighted with a pendulum weight to prevent its rotation as the shaft is rotated with the vehicle wheel. A reset knob is provided for resetting the counter when desired.

3,779,457
DATA NORMALIZING METHOD AND SYSTEM

William S. Cornyn, Jr., Palos Verdes, Calif.; Stephen A. Dier, Fraser, and Robert M. Lynas, Birmingham, both of Mich., assignors to TRW Inc., Redondo Beach, Calif.

Filed June 28, 1971, Ser. No. 157,095
Int. Cl. G06g 7/48, 7/57
U.S. Cl. 235—151.3 18 Claims



Raw numerical output data representing the value of a selected function or parameter which varies according to a known relationship with one or more control functions or parameters is monitored and its measured value is normalized to determined the value, i.e., normalized value of the date under preselected standard conditions at which the control parameters have predetermined standard or nominal values. Signals representing the values of the control parameters are produced and converted to correction factor signals representing the deviations, if any, between the monitored and standard values of the control parameters, and the correction factor signals are combined with a signal representing the measured value of the raw output data to obtain a normalized data signal representing the normalized value of the output data. The data normalizing operation may occur in a test mode which provides a readout representing the normalized data value, in a monitoring mode which provides a display representing the raw and normalized data values, the monitored control parameter values, and the parameter correction factor values or furnishes these values to a computer for further processing or to a data bank for storage, or in an adaptive mode which provides error or feedback signals for regulating the control parameters to maintain the latter precisely at or within a given range about their standard or nominal values.

3,779,458
SELF-CHECKING DECISION LOGIC CIRCUIT

Herbert Yu-Pang Chang, Woodridge; Roger Alan Elliott, Plainfield, both of Ill.; Daniel John Senese, Freehold, and Thomas Loyd Smith, Oceanport, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

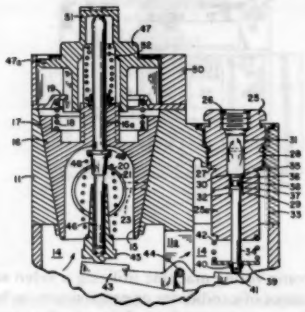
Filed Dec. 20, 1972, Ser. No. 316,876
Int. Cl. G06f 11/08
U.S. Cl. 235—153 BG 14 Claims

A self-checking decision logic circuit for making any one of a number of possible decisions based on selected bits stored in a check register. A true and a complement output of each cell of the check register are individually combined with corresponding true and complement outputs of a mask register to generate a decision signal via the complement outputs and a check signal via the true outputs. A controlled entity assumes one of two states responsive to the decision signal and generates a state signal indicative of its state. The check signal and state signal then are applied to a 1-out-of-n error checking circuit to check the validity of the decision operation.

3,779,459
COMBINATION GAS VALVE

Robert J. Battersby, Lomita, and Louis L. Mucciante, Cerritos, both of Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 21, 1972, Ser. No. 282,502
Int. Cl. F24c 3/10
U.S. Cl. 236—15 A 10 Claims

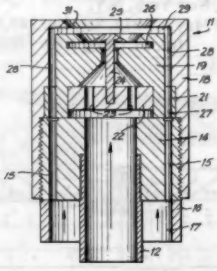


A valve having substantially the same dimensions as a conventional thermocouple energizable electromagnet generally used in manually resettable safety gas valves. It is used to convert such a safety valve into a valve for supplying gas to a runner burner for remotely lighting a pilot burner by eliminating the conventional safety valve and by using it with a main burner control valve that can only open when a pilot burner flame exists at the main burner.

3,779,460
ACOUSTIC NOZZLE

Richard J. Monro, Bronxville, N.Y., assignor to Combustion Equipment Associates, Inc., New York, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,121
Int. Cl. B05b 3/14
U.S. Cl. 239—102 8 Claims



A nozzle for finely dispersing a liquid in a gas stream, usually air or steam, has therein a stem and a cap for diverting the gas stream radially into a resonance chamber. The pressure waves resulting are effective for atomizing a liquid introduced either into the resonance chamber or into the gas stream downstream from the cap.

3,779,461

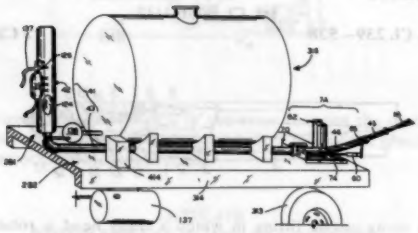
EXPLOSIVE BLAST ACTUATED LIQUID DISTRIBUTORS AND PROCESSES OF OPERATION THEREOF

Dwaine M. Paul, Amarillo, Tex., assignor to Ebald, Inc., Lubbock, Tex.

Continuation-in-part of Ser. No. 835,539, June 23, 1969, Pat. No. 3,589,604. This application June 11, 1971, Ser. No. 152,044

Int. Cl. B05b *9/04*

U.S. Cl. 239—172 12 Claims



An explosive blast actuated liquid distributing assembly is transported by and located at or near and operatively connected to the location at which its operation is desired for applying successive increments of water as a stream which extends substantial distances from the end of that assembly for purposes of quelling riots and controlling fires.

3,779,462

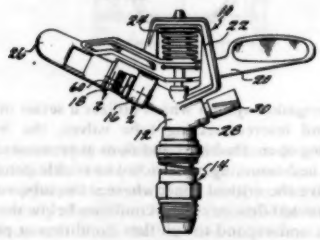
STEP-BY-STEP ROTARY SPRINKLER HEAD WITH QUICK-CHANGE AND COLOR-CODED NOZZLE INSERT

Kenneth J. Bruninga, Mapleton, Ill., assignor to Nelson Irrigation Corporation, Brimfield, Ill.

Filed Feb. 14, 1972, Ser. No. 226,051

Int. Cl. B05b *3/02*

U.S. Cl. 239—230 7 Claims



A step-by-step rotary sprinkler head having a nozzle insert provided with exterior straight threads for loosely cooperating with the interior threads of the sprinkler body outlet and an O-ring of resilient material adjacent the threads on the insert for engaging a cylindrical interior surface within the outer end of the outlet in radially inwardly compressed relation so as to provide a water-tight seal between the exterior of the nozzle insert and the interior of the outlet and a constant, non-wedging, frictional force which prevents the nozzle insert from working loose during the high amplitude and high frequency vibrations inherent in the normal operation of the sprinkler head, the arrangement being such that the nozzle insert can be removed and replaced by any one of a series of nozzle inserts having different orifice sizes by a simple digital turning action. The orifice size of the nozzle insert is color-coded by a preformed band of resilient material having a coloring agent dispersed therein mounted within an annular groove formed in the exposed exterior periphery of the nozzle insert by expanding the band over the nozzle insert and allowing it to contract within the annular groove.

3,779,463

MIXING DEVICE

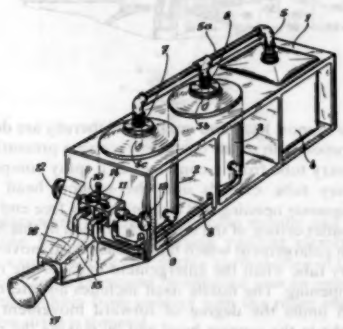
Rudolf Schlidt, Elliger Hoehe 16, Bonn-Bad Godesberg, Germany

Continuation of Ser. No. 81,046, Oct. 15, 1970. This application Nov. 28, 1972, Ser. No. 310,086

Claims priority, application Germany, Oct. 16, 1969, P 19 52 095.7

Int. Cl. A62c *13/32*, *13/34*

U.S. Cl. 239—308 7 Claims



A mixing apparatus for intermixing media adapted to flow, in which at least two containers respectively containing said media communicate on one hand with a source of pressure common to said containers and on the other hand with adjustable control valves which in turn communicate with mixing nozzle means common to said control valves, said control valves being provided with common actuating means for selectively establishing and interrupting fluid flow from said control valves to said nozzle means.

3,779,464

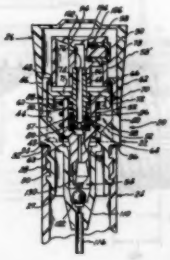
MANUALLY ACTUATED LIQUID SPRAYING DEVICE

Carl E. Malone, Fort Lauderdale, Fla., assignor to The AFA Corporation of Florida, Miami Lakes, Fla.

Filed Mar. 22, 1972, Ser. No. 236,807

Int. Cl. B05b *1/30*

U.S. Cl. 239—350 28 Claims



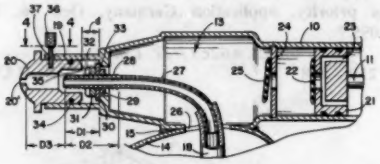
A spray device of the type adapted to be mounted as a closure on a container of liquid. The sprayer has a manually actuated pump with valve assemblies which discharge liquid through a spray nozzle substantially without dribble at the beginning and end of the spray cycle.

3,779,465

SPLATTER PATTERN CONTROL FOR SPRAY GUNS

Howard V. Jett, 238 Los Angeles Ave., Moorpark, and Joseph B. DeMarco, 18434 Collins St. Apt. 12A, Tarzana, both of Calif.

Filed May 19, 1972, Ser. No. 254,899
Int. Cl. B05b 7/12
U.S. Cl. 239—416 2 Claims



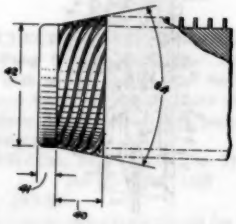
A nozzle support head and nozzle held thereby are designed for cooperation with an air chamber receiving pressurized air and a delivery tube from a container of a spray composition. The delivery tube extends into the support head past a reduced diameter opening and terminates in a free end spaced from the outlet orifice of the nozzle. A portion of this free end includes an enlargement which blocks backward movement of the delivery tube when the enlargement engages the reduced diameter opening. The nozzle itself includes an internal portion which limits the degree of forward movement of the delivery tube in the support head and by making the position of the nozzle longitudinally adjustable on the support head, the distance between the reduced diameter opening and the internal portion can be varied thereby limiting the amount of air that can bypass about the enlarged portion and mix with spray composition so that the splatter pattern can be controlled. In addition, the enlargement itself may be shifted along the free end of the delivery tube to vary the spacing between the extreme end of the delivery tube and the nozzle orifice to provide further control of the splatter pattern.

3,779,466

METHOD OF PRODUCING A NOZZLE FOR A TURBOGENERATOR

Charles P. Majkrzak, Nutley, and Michael S. Folger, Eatontown, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Division of Ser. No. 78,635, Oct. 6, 1970, Pat. No. 3,704,499. This application Aug. 14, 1972, Ser. No. 280,288
Int. Cl. B05b 1/34
U.S. Cl. 239—489 4 Claims



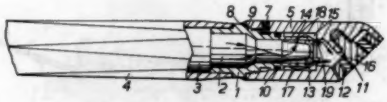
A nozzle for a turbogenerator having a nozzle body with a number of constant width spiraling grooves on a constant diameter and with a tapered circumference. A shroud is fitted to the tapered circumference of the body, and the assembly forms a multiplicity of nozzle inlets and outlets. A cavity in the nozzle body is evacuated and sealed, and the shroud also contains a cavity therein which is evacuated and sealed.

3,779,467

ABLUTIONARY APPLIANCES

Dennis Charles Arbon, Bourton-on-the-Water, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England

Filed Sept. 19, 1972, Ser. No. 290,366
Claims priority, application Great Britain, Oct. 29, 1971, 50,429/71
Int. Cl. B05b 1/32
U.S. Cl. 239—538 5 Claims



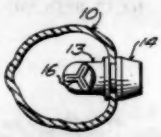
A spray nozzle fitting in which a spray head is rotatably mounted on a body for movement from a first to a second position to change the direction of the discharge spray, and valve means within the spray nozzle controlled by such rotation of the spray head to obtain respective different rates of discharge flow when the spray head is in the first or second position.

3,779,468

TRICKLE IRRIGATION SYSTEM

Lloyd Spencer, 220 Patrician Way, Pasadena, Calif.

Filed July 21, 1972, Ser. No. 274,078
Int. Cl. B05b 15/02
U.S. Cl. 239—542 18 Claims



A trickle irrigation system which utilizes a series of irrigating valves and interconnecting tube valves, the irrigating valves assuming open, flushing conditions at pressures below a critical zone, and assuming a restricted or trickle condition at pressures above the critical zone; whereas the tube valves assume a constructed flow or closed condition below the critical pressure zone and expand to full flow condition at pressures above the critical zone. As a consequence, on supplying water to the irrigation system, the irrigating valves first flush then automatically restrict to trickle condition in sequence as the tube valves open in sequence. When the water is shut off a second flushing action occurs before drainage is complete.

3,779,469

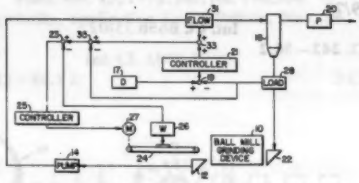
CONTROL SYSTEM AND METHOD FOR A REVERSED BALL MILL GRINDING CIRCUIT

Richard E. J. Putman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 18, 1972, Ser. No. 227,584
Int. Cl. B02c 25/00
U.S. Cl. 241—30 7 Claims

The dynamically fast in response and stable control arrangement for a reversed ball mill grinding circuit, which operates in accordance with the basic control algorithm that the new

material feed rate to the reversed ball mill grinding circuit is controlled as a function of the net output solids flow production from the production cyclones associated with that grinding circuit plus the integral of the error between the desired solids flow load and the actual solids flow load of the grinding mill associated with that circuit.



3,779,470

ROTOR FOR USE IN IMPACT CRUSHERS

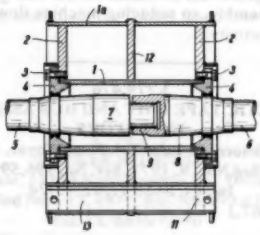
Barnhard Johannes Smits, Ahaus, Germany, assignor to Die Hazemag Hartzerkleinerungs und Zement-Maschinenbau-Gesellschaft m.b.H., Muenster, Germany

Filed Sept. 13, 1972, Ser. No. 288,792

Claims priority, application Germany, Sept. 14, 1971, P 21 45 868.4

Int. Cl. B02c *13/28*

U.S. Cl. 241—191 **5 Claims**



A rotor has a rotor shaft composed of two discrete shaft sections the adjacent ends of which are connected by a sleeve guided in appropriate bores of the ends, so that the shaft sections are axially aligned but have freedom of limited axial relative displacement. Each shaft section carries a rotor end plate fixed to it and extending transversely of it, and a circumferential wall extends between and connects the end plates, surrounding the shaft. Another embodiment is also disclosed.

3,779,471

SPEED CONTROL LINKAGE MEANS FOR WINDING BOBBINS

Hermann Grein, Remscheid, and Volker Vorlander, Berlin, both of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

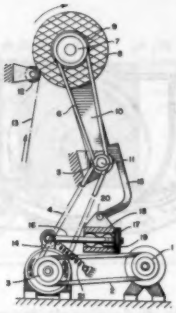
Filed July 2, 1971, Ser. No. 159,418

Claims priority, application Germany, July 7, 1973, P 20 33 578.8

Int. Cl. B65h *59/38*

U.S. Cl. 242—18 CS **12 Claims**

A bobbin winding means in textile machinery having a driven spindle for the bobbin and a roller means in contact with the peripheral surface of the bobbin in a closed drive position thereof, the drive means for said bobbin including a friction gear for variation of the speed of revolution of the bobbin in response to increasing diameter of the bobbin by means of a speed control linkage means adapted to actuate a lever adjusting means on the friction gear in response to relative displacement between the bobbin spindle and the roller means, this linkage means having yielding elements which move as a single-acting unit during normal drive of the bobbin but which can be pressured or adjusted into an open position freeing the bobbin from contact with the roller means when the bobbin drive is stopped.



3,779,472

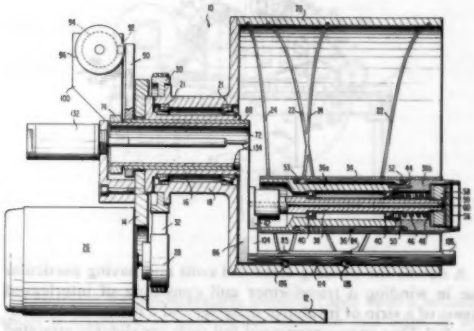
SURFACE DRIVEN WINDER

Beryl A. Boggs, Chester, Va., assignor to Advex Corporation

Filed Sept. 15, 1971, Ser. No. 180,763

Int. Cl. B65h *54/00, 54/28*

U.S. Cl. 242—18 DD **13 Claims**

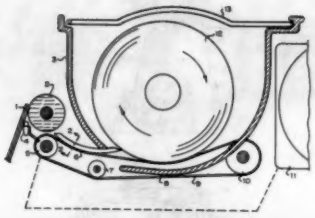


A yarn package is driven by the inner periphery of a rotating drum. Yarn fed in from the open end of the drum passes over a compensating yarn guide and a main yarn guide which are driven by cam slots in the inner periphery of the drum. The yarn guides maintain constant yarn tension, with zero lash, and also undergo an anti-ribboning motion.

3,779,473
AUTOMATIC PAPER LOADING AND GUIDING MECHANISM

Roger C. Edrinn, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 20, 1972, Ser. No. 245,998
Int. Cl. B65h 75/00; G03b 1/56
U.S. Cl. 242—54 R 6 Claims

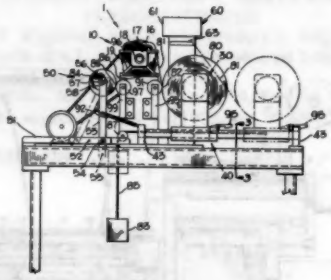


Driven rubber belts are arranged for receiving a roll of paper. A paper deflector is positioned to catch the free end of the rotating paper roll for guiding it through a paper feeding mechanism.

3,779,474
MACHINE FOR WINDING FOIL RIBBON COILS

Robert G. Harelson, Florissant, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 800,521, Feb. 19, 1969, abandoned.
This application Aug. 23, 1971, Ser. No. 174,141
Int. Cl. B65h
U.S. Cl. 242—56.1 5 Claims

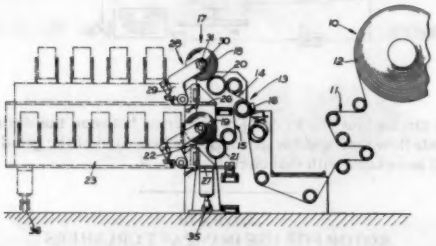


A device for winding electrical coils and having particular use in winding a transformer coil consisting of interleaved layers of a strip of insulative material and a ribbon of conductive foil. One or two prewound foil reels are slidably mounted on a carriage for (independent) movement to a winding position adjacent the piece on which the coil is wound and to a second position spaced radially from the coil. The piece on which the coil is wound is rotatably held on a reeler assembly. A follower piece is biased into engagement with the outer face of the prewound reel and defines the take-off point for the foil. Nothing else touches the foil between the reel and the coil. One or two prewound reels of insulative tape are each biased into contact with a second follower piece, and the insulative tape is interleaved with the conductive ribbon.

3,779,475
SLITTING AND REWINDING MACHINE

Harold Plevin, Hyde, England, assignor to C. A. Harnden Limited, Hyde, England

Filed Nov. 3, 1971, Ser. No. 195,172
Claims priority, application Great Britain, Dec. 16, 1970, 59,749/70
Int. Cl. B65h 35/02
U.S. Cl. 242—56.2 2 Claims

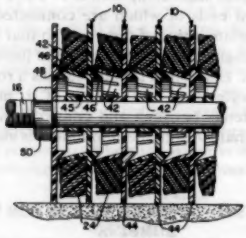


A slitting and rewinding machine, wherein a relatively wide web of material, such as paper or plastics film, is slit into a plurality of narrower webs which are then rewound into individual rolls, comprises, at a rewind station thereof, at least one pair of roll support assemblies carrying a plurality of individual roll carriers, the assemblies being pivotable and arrangeable in a first configuration wherein one assembly is in a rewind position and the other assembly is in an unload position and a second configuration wherein the positions of the assemblies are reversed, enabling a second run of the machine to take place whilst full individual rolls are removed from the inoperative assembly, so reducing machine downtime and increasing productivity.

3,779,476
MAGNETIC TAPE UNIT AND HUB ASSEMBLY THEREFORE

Thomas J. Hofbauer, 48 Lake Trl. East, Wayne, N.J.

Filed Nov. 8, 1971, Ser. No. 196,599
Int. Cl. B65h 17/02, 75/24
U.S. Cl. 242—67.3 12 Claims



A magnetic tape unit and hub assembly therefore in which the hub portion of the assembly is expansible in a radial direction and has a camming surface which is adapted to cam an adjacent hub member outwardly when the hub members are placed in an abutting relationship on a common support. A method for winding magnetic tape onto hub assemblies of the above type.

3,779,477

FISHING REEL

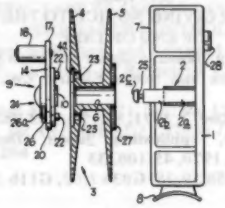
Raymond Humble, Alnwick, England, assignor to Hardy Brothers (Alnwick) Limited, Willowburn, Alnwick, Northumberland, England

Filed Nov. 15, 1971, Ser. No. 198,904

Claims priority, application Great Britain, Nov. 26, 1970, 56,224/70

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.1 R 3 Claims



A fishing reel having a multiplying gear system with a unitary winding assembly which is easily and quickly detachable from the fishing line drum so that different winding assemblies can be interchanged which have different gearing ratios and so that different fishing line drums can be replaced in a simple manner. The fishing line drum rotates about a spindle fix to a backing plate which is mounted on the fishing rod. The fishing line drum is caused to rotate by a unitary winding assembly comprising at least two gears. The winding gear assembly has studs extending into socket means in the fishing line drum in order to engage and rotate the fishing line drum.

3,779,478

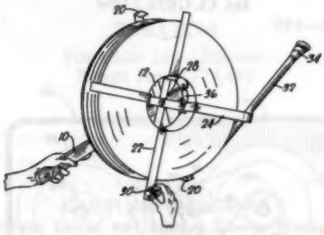
SOAKER HOSE REEL

Walter V. Fugate, 11123 Shortmeadow Dr., Dallas, Tex.

Filed Nov. 17, 1971, Ser. No. 199,425

Int. Cl. B65h *75/40*

U.S. Cl. 242—86 3 Claims



A device for holding a lawn hose comprising a first vertical generally flat and coplanar cross; and a second vertical cross having an inner central section secured to the center of the first cross and an outer coplanar section lying in a plane parallel to and spaced from the first cross, the hose being wound about the central section and disposed between the outer coplanar section and the first cross.

3,779,479

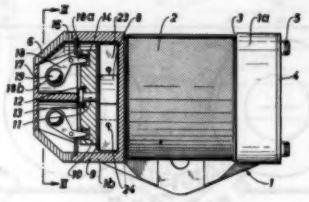
LOCKING DEVICE FOR A WINDING UP SAFETY BELT FOR VEHICLES

Stig Martin Lindblad, 440 20, Vargarda, Sweden

Filed Nov. 8, 1971, Ser. No. 196,493

Int. Cl. A62b *35/00*; B65h *63/04*

U.S. Cl. 242—107.4 4 Claims



A locking device for vehicle safety belts of the wind-up type having one part of the safety belt wound onto a roller from which it may be unwound against the action of a spring and which locking device includes a brake element connected to said roller for rotation therewith, levers engageable with said brake element and inertia elements provided with said arms whereby when the vehicle is subjected to a rapid acceleration said inertia elements cause said levers to engage said brake element whereupon said roller is prevented from rotating in the belt winding off direction.

3,779,480

TRANSLATING WINDER FOR ELECTRIC CABLES

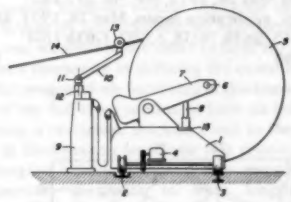
Andre Paul Cambou, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jan. 7, 1971, Ser. No. 104,574

Claims priority, application France, Mar. 19, 1970, 7009853

Int. Cl. B65h *57/28*

U.S. Cl. 242—158 R 2 Claims



Apparatus for automatically winding cable onto a rotating spool is disclosed in accordance with the teachings of the present invention wherein said rotating spool is mounted on a moveable carriage, the lateral movement of which is controlled as a function of the displacement of the cable as said cable is wound on said spool. As adjoining turns of cable are formed, the angle formed by the intersection of said cable with said spool is varied. The speed and direction of the lateral movement of the moveable carriage is determined by said angle such that said lateral movement opposes the displacement of said cable to urge said angle to a null value. An electric motor is supplied with energy having controllable magnitude and phase for driving the moveable carriage.

3,779,481

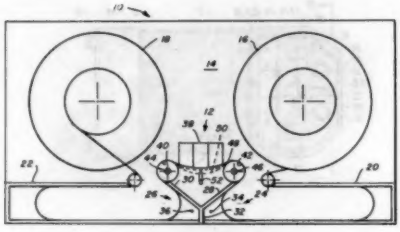
VACUUM BUFFER

John H. Wilson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 199,697, Nov. 17, 1971. This application Dec. 27, 1971, Ser. No. 212,405

Int. Cl. G11b *15/58, 23/12*

U.S. Cl. 242—182 **3 Claims**



This invention describes an apparatus which uses a vacuum buffer to control the position of a magnetic tape against the transducing heads whereby the tape can be lifted away from the head surface during rewind. The vacuum buffer comprises an enclosed space on the front of the tape deck which is enclosed by two rotating cylindrical elements, the tape stretched across the top of the elements and a wall closing the space on the bottom side, between the two rotating elements. One or both of the rotating elements can be capstans. The oxide surface of the tape is placed uppermost and the head structure is mounted between and above the rollers with the transducing gaps below. Vacuum is applied through an opening in the back wall of the tape deck and a cover plate mounted to the wall closes off the buffer space on the front. Applying vacuum to the buffer space, the tape is pressed downward by atmospheric pressure, taking it out of contact with the transducing heads.

3,779,482

MAGNETIC RECORDING AND REPRODUCING APPARATUS

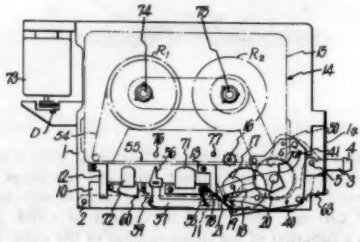
Toshihiko Chimura, Sohka, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 26, 1972, Ser. No. 257,182

Claims priority, application Japan, May 28, 1971, 46/44392

Int. Cl. B65h *59/38, 63/02*; **G03b** *1/04*

U.S. Cl. 242—190 **8 Claims**



An apparatus for recording and/or reproducing signals on a magnetic tape which is wound on supply and take-up reels, preferably within a cassette, and which has a tape drive for transferring the tape from one to the other of the reels during recording, reproducing and other operations of the apparatus, is provided with a tape tension detecting element moved in response to a change in tape tension from a predetermined value or norm, as upon the full unwinding of the tape from one of the reels, for initiating operation of a shut-off device by the tape drive, and such shut-off device provides a shut-off force for halting operation of the tape drive only if the detected change in tape tension from the norm continues for a predetermined period or time delay after initiation of the operation of the shut-off device, whereby to ensure that the tape drive operation will not be halted in response to merely a transitory or temporary change in tape tension.

3,779,483

APPARATUS FOR GIVING NOTICE TO THE APPROACH OF END OF TAPE

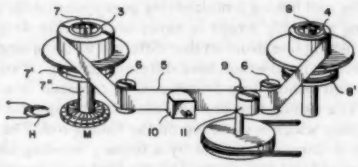
Syuzi Inoue, Gunma, Japan, assignor to Tokyo Sanyo Electric Co., Ltd., Gunma and Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 2, 1971, Ser. No. 203,983

Claims priority, application Japan, Dec. 2, 1970, 45/108332; Dec. 2, 1970, 45/108333

Int. Cl. B65h *59/38*; **G03b** *1/02*; **G11b** *15/32*

U.S. Cl. 242—191 **19 Claims**



An apparatus for giving a warning during the transport of a tape of the approach of the end of the tape when some length of tape still remains for recording or playback before the end of the tape is reached. The warning is produced by detecting when the rotational speed of the rotary shaft of the supply reel or take-up reel has reached a given level as the transport proceeds from one reel to the other.

3,779,484

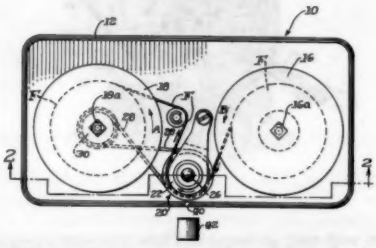
FILM MAGAZINE WITH DRIVE CAPSTAN

Robert F. Porazinski, Norridge, Ill., assignor to Bell & Howell Co., Chicago, Ill.

Filed Nov. 22, 1971, Ser. No. 201,041

Int. Cl. G03b *23/04*

U.S. Cl. 242—199 **5 Claims**



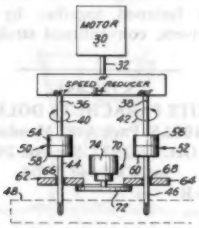
A film magazine or cassette for cameras, projectors, recorders, or the like. The magazine includes a film supply reel and a film take-up reel disposed within an enveloping wall struc-

ture for rotation about generally parallel axes to carry convoluted film. A capstan assembly, including a roller or hub, is rotatably mounted on the wall structure and engages the film for transferring the film from the supply reel to the take-up reel. The capstan is operatively connected to the take-up reel by a friction belt. A roller-type overrunning clutch forms an integral part of the capstan and is adapted to receive a round shaft from an appropriate photographic apparatus, projector, recorder, or the like, to permit the shaft to over-run the capstan and thereby maintain tension in the film between the supply reel and the capstan.

3,779,485
MAGNETIC TAPE TRANSPORT SYSTEM AND ASSOCIATED CONTROLS

Edgar Wolf, New Hyde Park, and Edward Lau, Old Westbury, both of N.Y., assignors to Redactron Corporation, Hauppauge, N.Y.

Filed Aug. 17, 1971, Ser. No. 172,509
Int. Cl. B11b *15/32*; **G03b** *1/04*
U.S. Cl. 242—204 **20 Claims**



For the reversible driving of a magnetic tape casette, two spindles are selectively connected by electromagnetic clutches to a pulley system driven by a constant speed motor such that one spindle is driven while the other is free-wheeling. Inertia damping discs are mounted on the spindles to smooth the response of the free-wheeling spindle to the driven spindle to which the free-wheeling spindle is coupled via the magnetic tape. A braking system engages the discs in the absence of driving of either spindle. A burst of reverse torque is applied to the free-wheeling spindle before the tape is completely halted. A leader detection circuit is used to detect the tape ends whereupon rotary power to the driven spindle is reduced.

ERRATUM

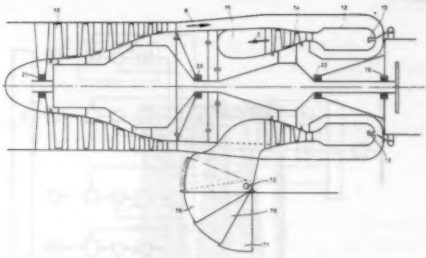
For Class 242—204 see:
Patent No. 3,779,498

3,779,486
GAS TURBINE ENGINES

Gordon Manns Lewis, and Stanley George Hooker, both of Bristol, England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, London, England

Filed Sept. 22, 1971, Ser. No. 182,817
Claims priority, application Great Britain, Sept. 26, 1970, 45,975/70
Int. Cl. B64d *27/10*
U.S. Cl. 244—53 R **10 Claims**

A gas turbine engine for use in aircraft in which a substantial part of the gases discharged from the engine are exhausted through swivel type nozzles capable of varying the direction of the discharge, which are disposed between the compressor and the turbine. Several embodiments are proposed and in

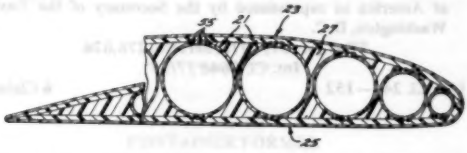


general the engines are characterised in that the flow through the compressor is in the opposite direction to the flow through the combustion chamber and turbine.

3,779,487
LIGHT WEIGHT CONTOURED LOAD CARRYING STRUCTURE

Larry J. Ashton, 3934 Marshal Way, Long Beach, and Dale P. Abildskov, 900 Bejay Pl., San Pedro, both of Calif.

Filed Apr. 19, 1971, Ser. No. 134,973
Int. Cl. B64c *3/24*
U.S. Cl. 244—123 **10 Claims**



A lightweight load carrying foil structure including a plurality of elongated filament wound fiberglass tubular members disposed in side by side relationship and varying in cross section from one member to the other to have the opposite lateral sides thereof cooperate in defining the contour of a foil cross section that progressively increases in thickness from the leading edge of the foil cross section to form an intermediate portion defining a maximum thickness and to then progressively decrease in thickness to terminate in a relatively thin trailing edge. Fiberglass skin is stretched over the tubular members and cooperates therewith to form longitudinal cavities between such members. A filler foam fills the cavities and is held in place by the fiberglass skin to contain the members against bending when a moment is applied thereto.

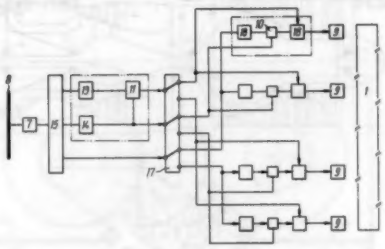
3,779,488
ELECTRIC SYSTEM OF A DEVICE FOR DEICING THE SURFACE OF THINWALLED STRUCTURES

Igor Anatolievich Levin, ulitsa Stepana Supruna, 12, kv. 74, Moscow, U.S.S.R.

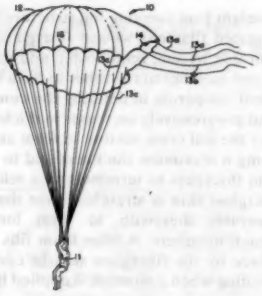
Continuation of Ser. No. 826,204, May 20, 1969, Pat. No. 3,672,610. This application Feb. 15, 1972, Ser. No. 226,522
Claims priority, application U.S.S.R., June 24, 1968, 874080
Int. Cl. B64d *15/00*
U.S. Cl. 244—134 A **3 Claims**

A system is disclosed for deicing the skin surface of aircraft and comprises a power supply unit to which are connected an

electrical power accumulator and a program switch. Low inertia converters such as magnetostrictive vibrators are provided in close proximity to the skin surface and are fed from the power supply unit via key switches each having one input connected to the electrical power accumulator while its second input is connected to the program selector switch such that the switch will produce successive single or bundles of electrical pulses separated by pauses at the converters.

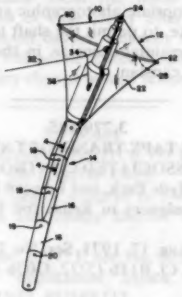


3,779,489
CONTROLLABLE GLIDING PARACHUTE
Jon T. Matsuo, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 31, 1972, Ser. No. 276,626
Int. Cl. B64d *17/34*
U.S. Cl. 244—152 **6 Claims**



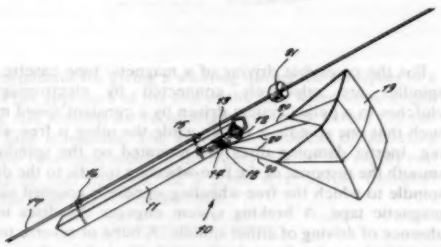
A glidable personnel-type parachute is provided having a conventional canopy and shroud lines connected to a pair of forward and aft risers, a selected number of adjacent shroud lines in the aft risers being releasable by the parachutist simply by pulling on a release lanyard to create a scalloped air-venting portion in the canopy skirt; the release lanyard may also be connected to the shroud lines on each side of the scalloped canopy portion to enable the parachute to be steered in its gliding movement.

3,779,490
SWIVEL TAILED KITE
John D'Amico, 3941 SW 122nd Ave., Miami, Fla.
Filed May 24, 1972, Ser. No. 256,396
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R **1 Claim**



A kite is disclosed which contains a swivel tail made of individual platelets fastened together by fastening means fabricated from rivets, conventional straight pins or acorn fasteners.

3,779,491
KITE PARACHUTE DOLLY
David L. McCoy, 1001 S. Park Ave., Mendota, Ill.
Filed Oct. 12, 1972, Ser. No. 296,923
Int. Cl. B64c *31/06*
U.S. Cl. 244—155 R **1 Claim**

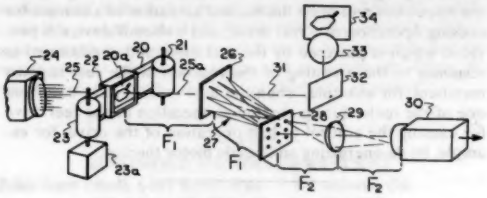


A device which allows a parachute to travel up a string of a kite, so that the parachute can be released near the kite and then float back down to the ground; the device consisting of a parachute dolly barrel having a front and rear hook that can be hooked over the kite string after the kite is flying, the front hook retaining a wire ram, a parachute weight to weigh down a parachute, and a dolly stop secured along the kite string and against which the dolly strikes.

3,779,492
AUTOMATIC TARGET RECOGNITION SYSTEM
Alex Grumet, Whitestone, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, Long Island, N.Y.
Filed Oct. 18, 1971, Ser. No. 189,875
Int. Cl. F41g *9/00, 7/00*; 42b *15/02*
U.S. Cl. 244—3.17 **20 Claims**

A coherent, optical signal processor for recognition of specific known targets at extremely high speeds, applying matched-filter techniques. A modified matched filter includes a pair of matched filters that will separately process the high and low spatial frequencies. By properly combining the outputs in a logical AND operation, the target may be interrogated for fine features as well as for correct size and shape. The optical memory bank of matched-filter pairs comprises known diffraction patterns of all resolvable views, in both azimuth and elevation, of the target, thus forming a target

recognition comb-filter bank. All views of the recognition bank are simultaneously interrogated optically according to



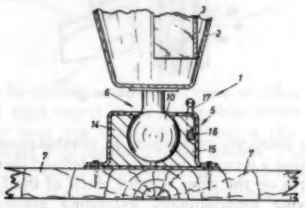
the diffraction pattern of the detected object to determine whether the detected object is the desired target as stored in any of the views in the memory bank.

3,779,493

STAND FOR CHRISTMAS TREES

Karl Gunnar Gidlof, Reveljgatan 3, S-421 76, Vastra Frolunda, Sweden

Filed Dec. 1, 1971, Ser. No. 203,675
Int. Cl. A07g *33/12*
U.S. Cl. 248—44 **2 Claims**



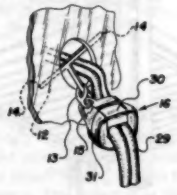
A stand, particularly intended for Christmas trees having means to secure the tree in a water container and means to enable said water container to take various positions of inclination, thereby greatly facilitating both support and correct alignment of the tree in a vertical position. Retaining means, such as clasps, are provided to secure the tree trunk in the water container, and a ball joint is provided to permit adjustment of the alignment of the water container relatively the base supporting said container. The ball joint outer concave portion comprises two sections, one rigid section and one movable relatively the first by means of an eccentric shaft operated by an actuating lever.

3,779,494

CORD ANCHORAGE SECURING DEVICE AND SECURE CORD ANCHORAGE DEVICE

John H. Nicholson, Tree Tops, 13 Aldridge Rd., Ferndowne, England, and William Jemison, 22 Winchester Rd., Summit, N.J.

Filed Feb. 3, 1972, Ser. No. 223,203
Int. Cl. F16l *5/00*
U.S. Cl. 248—56 **10 Claims**



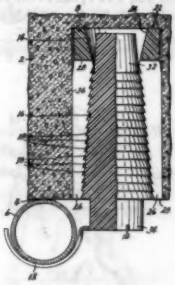
A cord anchorage device is provided with an attachable or integral device to secure the cord anchorage device to an appliance or aperture wall so that the anchorage components may not be readily lost when securing a cord.

3,779,495

WALL ANCHOR FOR ELECTRICAL CONDUITS

Albert A. Richards, 7127 Lafayette St., Wyandotte, Kans.

Filed Aug. 5, 1971, Ser. No. 169,278
Int. Cl. F16b *15/04*
U.S. Cl. 248—71 **1 Claim**



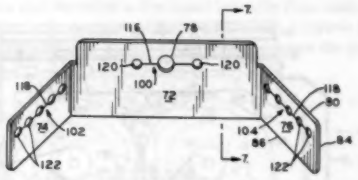
A wall anchor for securing electrical conduits or the like to concrete walls, and consisting of a tubular, internally tapered, elastically expansible plug adapted to be inserted freely into a cylindrical socket drilled therefor in the wall, and a correspondingly tapered core member adapted to be driven into the plug whereby to expand the latter into tight frictional engagement with the wall of the socket, and a hook member carried by the core at the outer end of said core and operable, as the core is driven, to clamp an electrical conduit against the wall surface.

3,779,496

CONTAINER FORMER

Theodore W. Welles, 12600 Shaker Blvd., Cleveland, Ohio

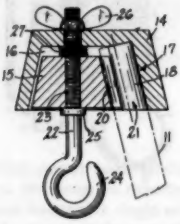
Filed Dec. 16, 1971, Ser. No. 208,552
Int. Cl. B65b *67/12*
U.S. Cl. 248—99 **8 Claims**



A device which comprises a generally U-shaped body portion dimensioned to be received at least partially around the open upper end of a generally rectangular container maintaining the container in an opened condition when foreign objects are deposited therein. The bottom of the U-shaped body portion is positioned to extend across the back wall of the container with the legs thereof extending across the container side walls. Preferably, the body portion is constructed from a resilient plastic material with the legs of the body portion biased slightly outward from each other to engage the side walls of the container. The bottom portion includes a mount-

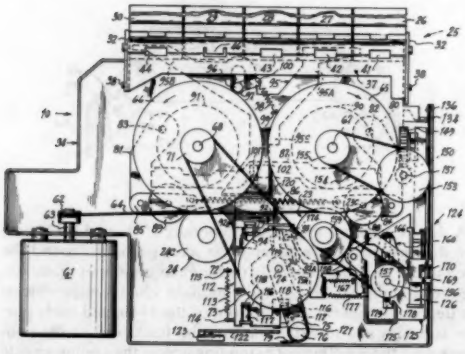
ing hole therein in order that the device may be received over a cooperating supporting and mounting device with the container itself. The bottom and legs of the body portion also include container gripping means for conveniently retaining the container in position and providing strength thereto.

3,779,497
TRIPOD AND SUPPORT THEREFOR
Peter B. Webber, 14 Waverly Rd., Branford, Conn.
Filed Oct. 15, 1971, Ser. No. 189,525
Int. Cl. F16m *1/22*
U.S. Cl. 248—165 **5 Claims**



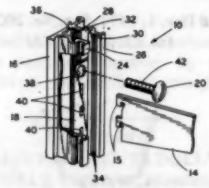
The legs of a tripod are clamped together by a device which comprises a first member having a generally triangular cavity with corner surfaces formed on a radius larger than the radius of the legs, and a second member of generally triangular shape having corner surfaces recessed on a radius smaller than the radius of the legs. The second member is assembled to the first member such that three-point line contact is made by the two members on each of the legs.

3,779,498
MAGNETIC RECORDING AND REPRODUCING APPARATUS
Shizuo Takashino, Saitama-ken, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 10, 1972, Ser. No. 233,452
Claims priority, application Japan, Mar. 19, 1971, 46/15866
Int. Cl. B11b *5/32*; G03b *1/04*
U.S. Cl. 242—204 **18 Claims**



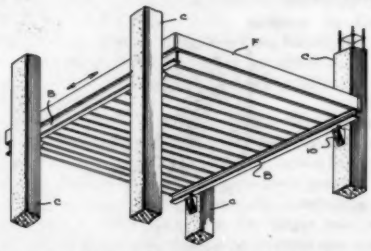
In an apparatus for recording and/or reproducing signals on a magnetic tape which is wound on supply and takeup reels and has its ends secured to the reels, the reels are rotationally coupled with respective reel support members which are selectively urged to rotate in the direction for winding tape on the respective reel upon the manual actuation of a control for causing operation of a reel drive, and a shutoff device is provided which is powered by the reel drive and conditioned in response to the arresting of the rotation of the reel support members, for example, when the tape is fully unwound from one of the reels, during continued operation of the reel drive for causing the control to halt operation of the drive, for example, by de-energizing an electric motor thereof.

3,779,499
SUPPORT ASSEMBLY
Irving W. Shell, 442 W. Wellington, Chicago, Ill.
Continuation of Ser. No. 254,289, May 17, 1972. This application Oct. 30, 1972, Ser. No. 301,867
Int. Cl. A47b *47/00*
U.S. Cl. 248—245 **5 Claims**



A support assembly comprising in combination a support standard having a longitudinal channel defined therein having opposing faces on the sides thereof, each of the faces of the channel having longitudinally extending grooves defined thereupon on either side of a pocket portion disposed therewithin; an intermediate member or connector means disposed in and between said pocket portion and connectable with an article to be supported thereby, said member having an opening defined therethrough extending axially of the article to be supported thereby; and a bolt extendible through said opening in said intermediate member into locking engagement with said grooves in said channel whereupon said standard, said intermediate member and said bolt are integrally joined to support said article when connected thereto. The locking engagement is obtained by the coaction of the grooves on the faces of the channel with the threads on the bolt.

3,779,500
FORM SUPPORT BRACKET
James R. Cox, Largo, Fla., assignor to Jim Cox Company, Largo, Fla.
Filed June 14, 1971, Ser. No. 152,808
Int. Cl. A47f *5/10*; A47h *33/00*; E04g *17/16*
U.S. Cl. 248—288 **12 Claims**



A support bracket for applying and maintaining a force and simultaneously permitting lateral movement of a movable ob-

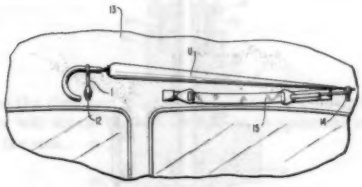
ject supported by the bracket. The bracket includes a supporting and securing means for maintaining the bracket stationary and a power transmitting bolt having Acme threads. At the working end of the bolt is positioned a roller means fitting into a suitable socket in the bolt. At the opposite end of the bolt a square shank is provided to permit the bolt to be advanced or retracted into position to apply and maintain the force. A retaining means and lubrication for the ball is provided.

3,779,501

AUTOMOBILE STORAGE BRACKET

Jules Scott Zibell, 6851 Roswell Rd. N.E., Atlanta, Ga.

Filed Aug. 25, 1971, Ser. No. 174,737
Int. Cl. A47h *1/16*
U.S. Cl. 248—302 **3 Claims**



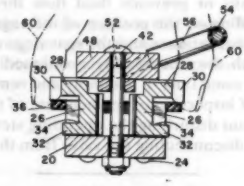
A bracket for storing an umbrella, cane, or other elongated, substantially rigid object in an automobile which has a garment hanger over the rear window and a clip such as a shoulder harness clipover the forward window. The bracket is constructed of a single piece, preferably of flexible material, and is comprised of a loop portion dimensioned to fit over and be secured onto the garment hanger, an open hook portion which is dimensioned to accommodate the handle portion of the umbrella and a stem portion which connects the loop portion and the hook portion. The bracket is installed on the garment hanger so that the open hook portion faces upwards, the bayonet of the umbrella is inserted into the clip over the front window and the handle of the umbrella is placed into the open hook portion of the bracket.

3,779,502

STAKE POCKET TIE DOWN INSERT

Bruce W. Marberg, P.O. Box 217, Bonita, Calif.

Filed Apr. 3, 1972, Ser. No. 243,621
Int. Cl. B65d *19/38*
U.S. Cl. 248—361 R **9 Claims**



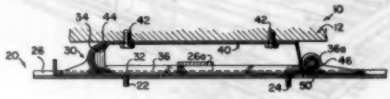
A tie down insert, for use in stake pockets of trucks generally and particularly in stake pockets conventionally provided in the tops of the side walls of the load boxes in pickup trucks or the like, the insert having means for swivel connection of load lashing ropes. The insert is in the nature of an accessory and is manually insertable by lowering the insert into the stake pocket while retracting a pair of sliding latch blocks which are spring biased into engagement with the structure defining the pocket when finger pressure thereon is released.

3,779,503

QUICK DETACHABLE SEAT FOR AUTOMOBILE

Joseph S. Lombardo, Sr., 13 Walnut St., North Brunswick, N.J.

Filed May 5, 1972, Ser. No. 250,815
Int. Cl. F16m *1/00*
U.S. Cl. 248—429 **5 Claims**



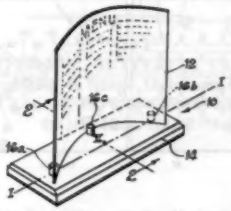
A seat for automobiles is provided which may be moved longitudinally on a track and which has a track-engaging element which is confined to movement along the track; a support is fixed to the seat and releasably connected to the track-engaging element for quick release of the seat from the track system.

3,779,504

STAND FOR MENUS AND THE LIKE

Sidney M. Schwartz, 10185 N. Collins Ave., Bal Harbour, Fla., and Avrum N. Andalman, 185 Euclid Ave., Glencoe, Ill.

Filed Apr. 17, 1972, Ser. No. 244,726
Int. Cl. A47b *97/04*
U.S. Cl. 248—441 **1 Claim**



An inexpensive but reliable stand to support a readily bendable article such as a menu, photograph, display card or the like which is flexible in at least one direction, e.g., one of paperboard. The stand has three posts, two of which are on a common axis and the third is displaced laterally from said axis. Thus, the item to be supported may be bent into concave form and rigidly supported by engaging the same between the posts.

3,779,505

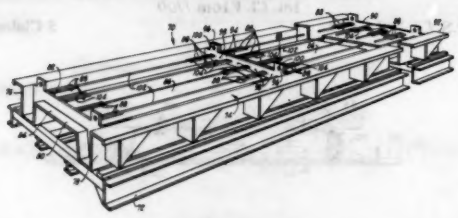
APPARATUS FOR SIMULTANEOUSLY PRECASTING A PLURALITY OF STRUCTURAL MEMBERS

Edward R. Sturm, Oklahoma City, Okla., assignor to Thomas Concrete Products Company, Oklahoma City, Okla.

Filed Sept. 30, 1970, Ser. No. 76,820
Int. Cl. B28b *7/22*
U.S. Cl. 249—84 **15 Claims**

Method and apparatus for precasting concrete wall panels having matched pairs of steel bearing plates cast therein. The wall panels are simultaneously precast in elongated casting beds in relative positions identical to the relative positions they are to occupy when employed in construction of a building. The wall panels are secured together in superposed rela-

tion in precise plumb and alignment by welding the matched pairs of bearing plates. The method and apparatus disclosed are suitable for precasting both slab wall panels and column-



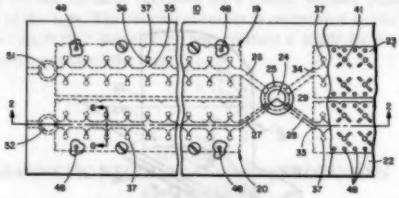
forming wall panels. A novel building structure is also disclosed which employs both slab wall panels and column-forming panels of the present invention in its construction.

3,779,506

APPARATUS FOR EQUALIZING THE FLOW RATE OF MOLDING COMPOUND INTO EACH OF A SERIES OF MOLD CAVITIES

Victor J. Adams, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 25, 1971, Ser. No. 174,815
Int. Cl. B29c *1/00*
U.S. Cl. 249—110 **2 Claims**



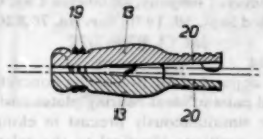
In a mold wherein there are a series of cavities to be filled from a single runner from which passageways, each including a gate, extend to each cavity, the velocity of molding or encapsulating compound into the cavities adjacent the end of the runner may be made the same as adjacent the beginning of the runner, by providing a dump cavity and a gate at the end of the runner to receive molding compound while the cavities adjacent the end of the runner are being filled.

3,779,507

MEANS FOR CONTROLLING FLUID FLOW

Ellis Whiteside Clarke, 47 Deramore Dr., Belfast, Ireland

Filed Sept. 10, 1971, Ser. No. 179,510
Claims priority, application Great Britain, Sept. 11, 1970, 43,513/70; Apr. 23, 1971, 10,934/71
Int. Cl. F16k *7/06*
U.S. Cl. 251—9 **8 Claims**



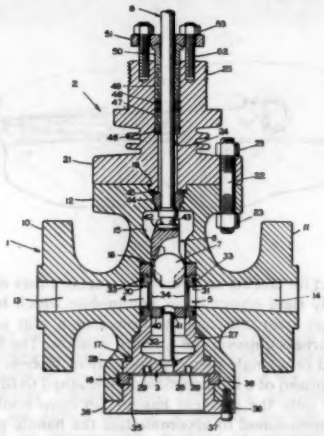
A device for regulating fluid flow, especially of blood, saline drips and other medical fluids in hospital administration sets, is in the form of a clamp having jaws engaging a flattened portion of tube, and this flattened portion has a tapered groove or a tapered elongated member between its opposed walls. Movement of the point of action of the clamp along the flattened tube portion varies the rate of flow.

3,779,508

VENTURI-BALL VALVE

Herman L. Paul, Jr., 720 Old Mill Rd., Wyomissing, Pa.

Filed Nov. 17, 1971, Ser. No. 199,516
Int. Cl. F16k *47/00*
U.S. Cl. 251—124 **2 Claims**



A venturi-ball valve including a body having coaxial inlet and outlet passages and a through opening substantially normal to the axis of the passages and communicating with the inner ends thereof. The inlet and outlet passages taper inwardly in the direction of the through opening. The body is adapted to be temporarily or permanently disposed in a fluid flow line. A pair of spaced seat rings is provided in the through opening, one at the juncture of the opening and the inlet passage and the other at the juncture of the opening and the outlet passage. The seat rings are carried by a removable tubular seat retainer which is located in the through opening. A ball cage containing a sealing ball is slidable along the through opening and the seat retainer by means of an operating stem which extends above the cage and through the top of the body. The ball permits or prevents fluid flow through the outlet passage depending on the position of the cage in the through opening. The seat retainer and the seat rings constitute a subassembly which may be readily positioned in the through opening at the same time of assembly and removed therefrom for purposes of inspection or replacement of the seat rings, as required, without disturbing the operating stem or other parts of the valve or disconnecting the valve from the flow line.

3,779,509

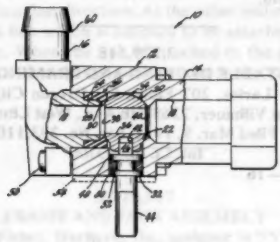
BALL VALVE

Christiaan J. H. Vandenbroek, Ann Arbor, Mich., assignor to Thetford Corporation, Ann Arbor, Mich.

Filed June 1, 1972, Ser. No. 258,901
Int. Cl. F16k *5/02*
U.S. Cl. 251—148 **9 Claims**

A ball valve that is of the floating-ball type wherein the ball is enclosed by a two-piece housing and is actuated by a stem. The stem is keyed to the ball and projects through the housing. The upstream half of the housing defines a rigid seat facing downstream. A single cylindrical flexible seal seals the mating

joint of the two-piece housing and provides a flexible seat facing upstream towards the rigid seat. The ball is positioned



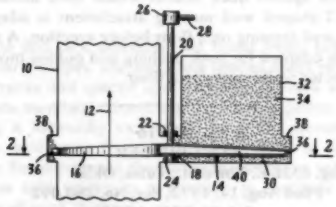
between the rigid and flexible seats so that the upstream fluid pressure will act on the ball tending to increase the effectiveness of the seal.

3,779,510

ROTATABLE GASTIGHT VALVE

Harald Krogsrud, Gjettum, Norway, assignor to Elkem A/S, Oslo, Norway

Filed Aug. 1, 1972, Ser. No. 277,129
Int. Cl. F16k *5/00, 1/16;* **C21b** *7/08*
U.S. Cl. 251—301 **6 Claims**



A rotatable valve for gas pipes is disclosed. The valve comprises a disc having an aperture therein, the diameter of the aperture being located entirely within a radius of the disc.

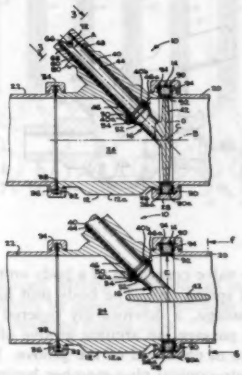
3,779,511

SANITARY BUTTERFLY VALVE

Frank G. Wenglar, Houston, Tex., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 13, 1971, Ser. No. 171,651
Int. Cl. F16k *1/226*
U.S. Cl. 251—306 **13 Claims**

A butterfly valve especially for use in pipeline systems where a very high level of cleanliness is mandatory, such as employed in the food, pharmaceutical and chemical industries. The valve comprises a disc-type closure element mounted on a valve stem that extends through the side of the valve body at a 45° angle, and a valve seat secured in place between a flange on one end of the valve body and an adjacent pipe flange, by a removable clamp. The stem is sealed to the valve body in a way that prevents entrapment of food or other material flowing through the valve, thus enhancing sanitary



conditions in the valve during periods of continued or prolonged use. A simplified valve operating handle assembly, removably secured to the outer end of the valve stem, holds the disc and stem in place in the valve body and facilitates quick disassembly and reassembly of the valve for periodic cleaning or other servicing.

3,779,512

STAMPED-DISC BUTTERFLY VALVE

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Filed Aug. 18, 1971, Ser. No. 172,628
Int. Cl. F16k *1/22*
U.S. Cl. 251—308 **5 Claims**

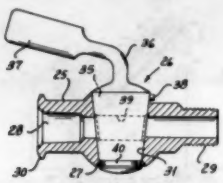
A butterfly valve assembly including a generally cylindrical liner carried within a valve body which valve body has a bore extending therethrough and is adapted to be supported between a pair of aligned pipe flanges. A cylindrical valve stem extends through the bores of the valve body and the liner and is journaled at each end thereof in the valve body. A one-piece butterfly valve disc is sized and shaped to conform to the valve stem and is rigidly secured thereto for opening and closing the valve assembly. An elastomer is molded-in-place and bonded around the entire inner periphery of the liner. An annular valve seat is formed on the inner periphery of the liner to provide, in conjunction with the elastomer, a seal between the liner and the butterfly valve disc when the butterfly valve disc is in the closed position.

3,779,513

VALVE

Melvin Levine, New York, N.Y., assignor to American Cystoscope Makers, Inc., Pelham Manor, N.Y.

Filed May 18, 1972, Ser. No. 254,712
Int. Cl. F16k 5/02
U.S. Cl. 251—309 8 Claims



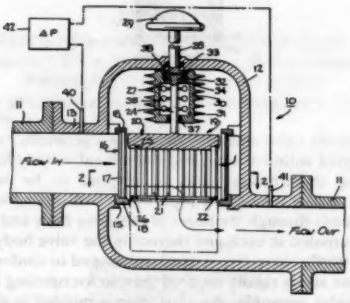
A three-piece valve consisting of a body unit, an insert unit and a C-shaped spring unit. The body unit has a horizontal first through passage, a downwardly tapered frusto-conical second through passage, an arcuate groove at the top and a camming surface at each end of the groove. The insert unit comprises a frusto-conical plug member having a transverse third through passage and an annular groove at its lower end. The plug member is located in the second passage and forms intimate rotary contact with the surface defining the second passage. The insert unit also comprises a handle which is integral with the plug member and a pin at the upper end of the plug member and projecting into the arcuate groove. The C-shaped spring unit registers with the annular groove and releasably engages a reversely tapered fourth passage formed in the bottom of the body unit and communicating with the second passage. The parts are so configured and arranged that, upon predetermined rotary movement of the plug member relative to the body unit in either direction, the pin engages and slides along a corresponding camming surface causing release of the plug member from the body unit against the action of the spring unit.

3,779,514

CONTROL VALVE AND PROCESS CONTROL SYSTEM

Joseph O'Connor, Jr., Goshen, N.Y., assignor to Kieley & Mueller, Inc., Middletown, N.Y.

Division of Ser. No. 112,890, Feb. 5, 1971, Pat. No. 3,709,245.
This application Sept. 25, 1972, Ser. No. 291,930
Int. Cl. F16k 51/00
U.S. Cl. 251—369 6 Claims



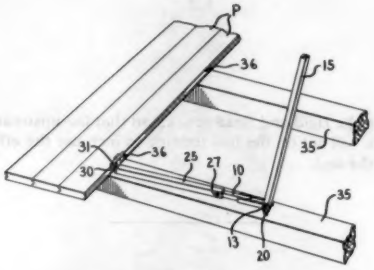
The control valve has a stator which imparts a swirl to the flow of fluid and a rotor which is rotated under the swirl of fluid. Energy is absorbed from the rotor in various ways. In one instance, the rotation of the rotor is subjected to a drag force which is induced in opposition to the force of rotation in order to control the pressure drop in the flow. In another instance, the rotation of the rotor is used to store electrical energy which can be used for other purposes throughout the process system.

3,779,515

ADJUSTABLE DECKING AND FRAMING TOOL

Dennis Gary Larios, 207 Eluria St., Oregon City, Oreg., and Cecil Eldon Vilhauer, 2265-5th Ave., West Linn, Oreg.

Filed Mar. 9, 1972, Ser. No. 233,110
Int. Cl. B66f 3/00
U.S. Cl. 254—16 1 Claim



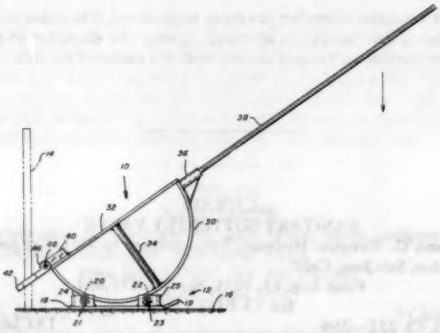
A horizontal base bar is pivotally connected at one end with a vertical lever arm having a point engageable with a wooden structure. A plurality of different attachments may be connected with the other end of the base bar. A decking attachment may be connected in one position for pushing deck boards together on their supporting joists. When the decking attachment is turned over, it may be used for pulling loose deck boards against deck boards which have already been nailed. A T-shaped wall moving attachment is adapted for squaring a wall framing on a floor before erection. A spike attachment is adapted for both pushing and pulling movements to align erected wall frames on a floor.

3,779,516

POST PULLER

Jack E. King, 6326 E. Third St., Tulsa, Okla.

Filed Aug. 14, 1972, Ser. No. 280,092
Int. Cl. E21b 19/00
U.S. Cl. 254—30 3 Claims



This invention describes a fence post puller which is made in two parts. The first part comprises a base plate which is set on the ground. There are two spaced horizontal rollers with

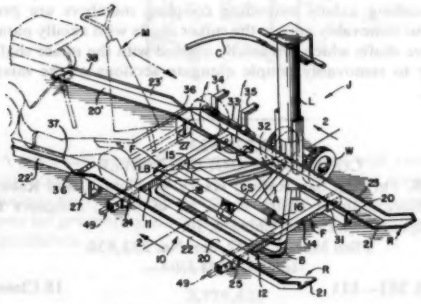
parallel axes fastened to the base plate. In use the plate is aligned so that the line joining the centers of the two rollers will intersect the position of the fence post. The second part comprises a semicircular frame which is adapted to place on the rollers and to rotate about its own center. There is a long lever which is attached to the frame, which is an extension of the diameter in a first direction. At the other end of the diameter is a hinged link which is adapted to be attached rapidly to the fence post. When the link is attached to the post and the handle is pulled down, the frame rotates in the rollers, lifting the fence post.

3,779,517

FRAME AND JACK ASSEMBLY

James Glenn Fisher, Hartwell, Ga., assignor to NVF Company, Wilmington, Del.

Filed Apr. 25, 1972, Ser. No. 247,441
Int. Cl. B66f *3/00*
U.S. Cl. 254—134 **20 Claims**



A frame and jack assembly, the frame being substantially rectangularly shaped and including spaced apart vehicle supporting tracks and spaced apart, transverse track supporting cross frame members connecting the tracks together, said jack including a forwardly extending, vertically movable lifting structure, said cross frame members secured to said lifting structure for movement therewith to elevate a vehicle supported on said tracks to a position to facilitate the performance of work thereon.

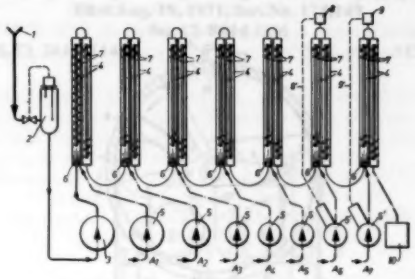
3,779,518

CONTINUOUS PHOTOGRAPHIC EMULSION PROCESSING

Gunther Koepke, Leverkusen; Wolfgang Muller-Bardorff, Cologne; Peter Herzhoff, Leverkusen; Hans Gref, Cologne; Wolfgang Schweicher, Leverkusen; Hans Frenken, Leverkusen; Karl Voss, Leverkusen; Willi Wasser, Leverkusen; Kurt Browatzki, Opladen, and Josef Friedsan, Langenfeld, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 10, 1972, Ser. No. 225,194
Claims priority, application Germany, Feb. 11, 1971, P 21 06 526.9
Int. Cl. B01f *5/00, 15/02*
U.S. Cl. 259—18 **18 Claims**

A continuous preparation of photographic emulsions by adding a plurality of individual components, the individual components being introduced continuously and successively by metering pumps. Each individual component is completely mixed with the main stream of emulsion before the next component is introduced. Mixing is carried out in a static mixing zone or alternatively by producing a secondary turbulent flow in a particularly designed mixing zone.

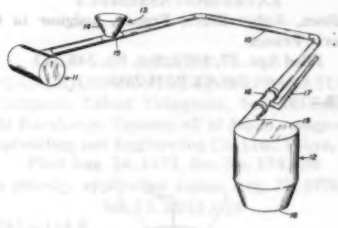


3,779,519

CONCRETE PLACEMENT

Reg A. Anderson, Dallas; Ronald W. Chandler, Richardson; Frederick N. Mueller, Dallas, and Norbert L. Osborn, Plano, all of Tex., assignors to Tetradyne Corporation, Dallas, Tex.

Filed June 7, 1971, Ser. No. 150,542
Int. Cl. B28c *5/06*
U.S. Cl. 259—147 **10 Claims**



A system is provided for delivering a settable concrete mixture to a placement point which includes a gas-solids delivery system for transporting dry cementitious material and suitable aggregate to a water addition zone, and thereafter it carries the cementitious material and water to a deceleration and mixing zone having its outlet positioned over the placement point. The deceleration and mixing zone causes the gas-solids stream to agitate as it decelerates and thereby thoroughly blends the concrete constituents to form a settable mixture, which drops from the opening on the predetermined concrete placement point.

3,779,520

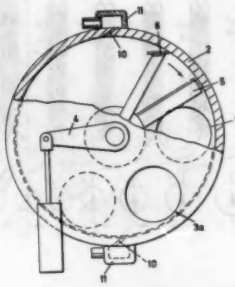
MIXING CHAMBER CONSTRUCTION

Albert Edwards, Peterborough, England, assignor to Baker Perkins Limited, Petersborough, England

Filed Mar. 24, 1972, Ser. No. 237,700
Claims priority, application Great Britain, Mar. 29, 1971, 8,095/71; Dec. 1, 1971, 55,725/71
Int. Cl. B28c *5/16;* **B22c** *5/04;* **B01f** *7/16*
U.S. Cl. 259—151 **10 Claims**

A mixing chamber for mixing cold-setting foundry sand mixtures comprising a cylindrical wall, a base, a roof, a materi-

al inlet, a material outlet and a rotary mixing element. The mixing element has an axis which is substantially co-axial with the axis of the cylindrical wall. The mixing chamber further has a first pair of diametrically opposed blades to sweep the



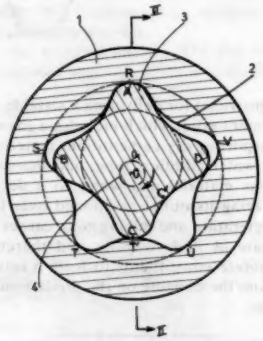
base of the chamber during rotation of the element and a second pair of diametrically opposed blades, angularly offset from the first pair of blades, to sweep the cylindrical wall of the chamber during rotation of the element.

3,779,521

EXTRUSION ASSEMBLY

Henri Godines, Aubervilliers, France, assignor to Creusot-Loire, Paris, France

Filed Apr. 27, 1972, Ser. No. 248,243
Int. Cl. B01f *7/08*
U.S. Cl. 259—191 **1 Claim**



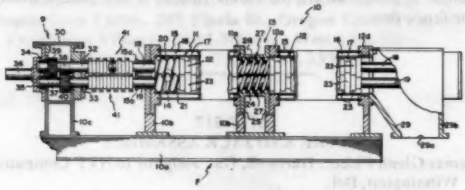
An extruder for feeding a die which extruder includes a mixer unit and a pump unit each of which comprise a screw rotatable in a sleeve, the mixer unit screw having a succession of threads of different pitch while the pump unit sleeve is internally threaded with N threads of pitch P and the pump unit screw has a mating profile, has (N−1)P/N threads and is movable in orbital rotation about the pump unit sleeve axis in contact with the sleeve.

3,779,522

COUPLING STRUCTURE FOR TWIN MIXER SHAFTS

Bernard A. Loomans, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.

Filed Dec. 9, 1971, Ser. No. 206,392
Int. Cl. B01f *7/02*
U.S. Cl. 259—192 **20 Claims**



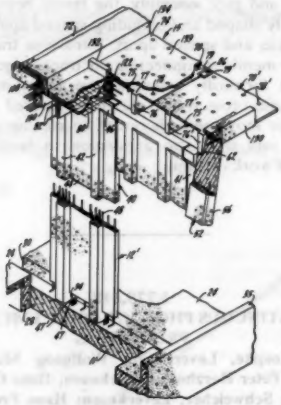
A mixer or reactor having axially parallel shafts with co-wiping, radially extending mixing and kneading members thereon, extending through a mixer or reactor barrel. A pair of intermeshing axially extending coupling members are provided to removably couple the mixer shafts with axially parallel drive shafts which are axially aligned with the mixer shafts and/or to removably couple elongate sections of the mixer shafts.

3,779,523

CONCRETE COOLING TOWER

Donn B. Furlong, San Rafael; Harry W. Gobler, and Robert Grother, both of Santa Rosa, all of Calif., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Mar. 8, 1972, Ser. No. 232,830
Int. Cl. B01f *3/04*
U.S. Cl. 261—111 **18 Claims**



A concrete cooling tower shell design made from a minimum number of precast factory-made parts. The shell is fabricated from three basic precast prestressed concrete building elements; namely: wall panels, T-beams, and louver posts. The wall panels and louver posts are positioned above a foundation to define the walls of the tower. The T-beams are positioned above the louver posts and wall panels to form the top deck of the tower. The T-beams have spray nozzle openings formed therein and have a reinforced concrete topping poured thereon in a unique manner which utilizes ex-

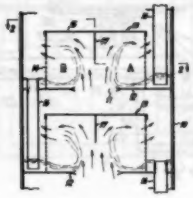
tension members at each nozzle opening to form a corresponding opening therethrough. The topping includes curb portions to define a hot water distribution basin thereabove.

3,779,524

GAS-LIQUID CONTACTING APPARATUS

Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Chuoku, Tokyo, Japan

Filed Aug. 10, 1971, Ser. No. 170,430
Int. Cl. B01d 3/26
U.S. Cl. 261—114 R 3 Claims



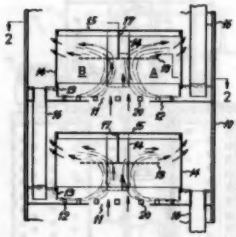
A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow aperture therein and a contacting structure provided on the trays. The contacting structure has a cover for preventing gas and liquid to ascending and partition plate therein.

3,779,525

GAS-LIQUID CONTACTING APPARATUS

Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Aug. 19, 1971, Ser. No. 173,080
Int. Cl. B01d 3/26
U.S. Cl. 261—114 R 3 Claims



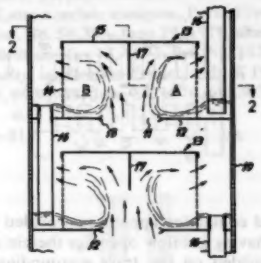
A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow aperture therein and a contacting structure provided on the trays surrounding the gas flow aperture. The contacting structure has a cover for preventing gas and liquid to ascending and a perforated plate for breaking gas and liquid mixing flow therein.

3,779,526

GAS-LIQUID CONTACTING APPARATUS

Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Aug. 19, 1971, Ser. No. 173,149
Int. Cl. B01d 3/26
U.S. Cl. 261—114 R 3 Claims



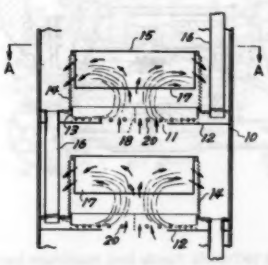
A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow aperture therein and a contacting structure provided on the trays surrounding the aperture. The contacting structure has a cover for preventing gas and liquid to ascending. The edge of said aperture is formed in a sawteeth shape.

3,779,527

GAS-LIQUID CONTACTING APPARATUS

Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Aug. 24, 1971, Ser. No. 174,450
Claims priority, application Japan, Aug. 29, 1970, 45/86432
Int. Cl. B01d 3/26
U.S. Cl. 261—114 R 3 Claims



A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow aperture therein and a contacting structure provided on the trays surrounding the gas flow aperture. The contacting structure has a cover for preventing gas and liquid from ascending and a perforated cylinder whose perforations are outwardly and downwardly directed.

3,779,528
GAS-LIQUID CONTACTING APPARATUS

Shogo Tanigawa; Takesi Yokoyama, both of Tamano, and Kouichi Karakawa, Toyama, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Aug. 24, 1971, Ser. No. 174,451

Claims priority, application Japan, Aug. 26, 1970, 45/84897; Sept. 16, 1970, 45/91872

Int. Cl. B01d *3/26*

U.S. Cl. 261—114 R **4 Claims**

A gas-liquid contacting apparatus provided with vertically spaced trays having gas flow openings therein and contacting structures provided on the trays surrounding the gas flow openings. Each contacting structure has a cover for preventing gas and liquid from ascending and a perforated plate above the liquid level on the tray and has a semi circular shape in horizontal section.

3,779,529
DIFFERENTIAL DIAPHRAGM CARBURETOR

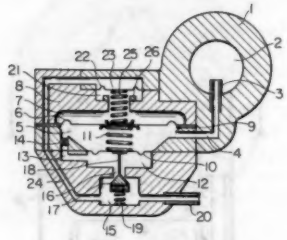
Ryuichi Kimura, Odawara-shi, Japan, assignor to Mikuni Kogyo K.K., Chiyoda-ku, Tokyo, Japan

Filed Mar. 13, 1972, Ser. No. 233,988

Claims priority, application Japan, Aug. 26, 1971, 46/64770; Oct. 30, 1971, 46/85964; Dec. 20, 1971, 46/102653; Nov. 27, 1971, 46/96891

Int. Cl. F02m *17/04*

U.S. Cl. 261—35 **22 Claims**



A differential diaphragm carburetor for an internal combustion engine comprising two diaphragms of different size interlocked with each other and one of said diaphragm interlocking with a valve which controls inflow of fuel to the carburetor from a fuel supply system, whereby the negative pressure in the fuel mixing chamber is applied to either one or both of the diaphragms and the operation of the valve is regulated by the difference in the size of the two diaphragms.

3,779,530
CARBURETORS

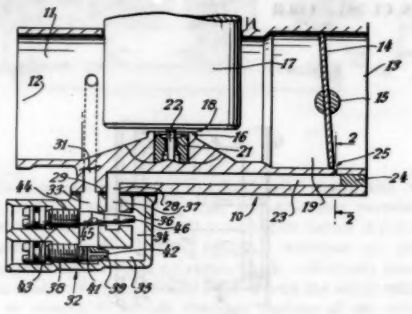
Geoffrey Lloyd Lawrence, Stanmore, England, assignor to The Zenith Carburetter Company Limited, Stanmore, Middlesex, England

Filed Mar. 23, 1971, Ser. No. 127,206

Claims priority, application Great Britain, Mar. 31, 1970, 15,079/70

Int. Cl. F02m *9/04*

U.S. Cl. 261—44 R **11 Claims**



A carburetor of the constant depression type having a butterfly throttle valve is provided with an auxiliary passage for supplying air directly to the induction passage downstream of the throttle valve when the said throttle valve is in the idling position, opening of the throttle valve beyond the idling position causing the air supply through the auxiliary passage to a position downstream of the throttle valve to cease either due to the edge of the throttle valve moving across the auxiliary passage opening or to the said auxiliary passage being closed.

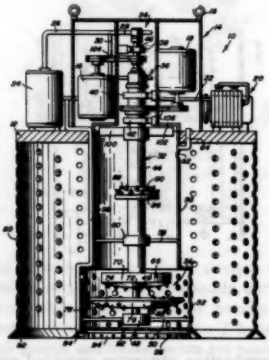
3,779,531
TOP DRIVEN MATERIAL SHEARING MIXER AND AERATOR

Robert W. White, 409 S. Union Ave., P.O. Box 74, Salem, Ohio

Continuation-in-part of Ser. No. 851,702, Aug. 20, 1969. This application Aug. 21, 1970, Ser. No. 65,969

Int. Cl. B01f *3/04, 7/32*

U.S. Cl. 261—87 **15 Claims**



A portable unit supported in or on a body of fluent material activates a shear zone within the material into which a treating medium is injected under pressure. The shear zone is activated

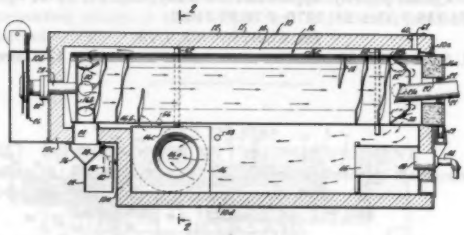
by counter-rotating rotors having projections through which the treating medium is discharged. The rotors are driven from a support by concentric shafts enclosing flow passages conducting the treating medium to the rotors.

3,779,532

CONVECTION HEATING SYSTEM FOR A TEMPERING FURNACE

Harold E. Mescher, Pico Rivera, Calif., assignor to Pacific Scientific Company, Commerce, Calif.

Filed Mar. 29, 1971, Ser. No. 128,978
Int. Cl. F27b 7/10
U.S. Cl. 266—5 R 11 Claims



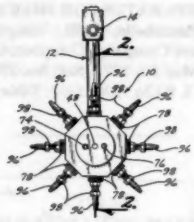
Within an insulated furnace chamber, a blower circulates heated gasses axially through a cylindrical rotary retort by way of large holes in opposite ends of the retort. A baffle wall near the blower directs the gas flow in the proper direction. An inlet in the entrance end of the retort opens to the exterior of the furnace for introducing the parts to be heated, and a guide within the retort prevents the parts from falling through the forward gas circulation holes. The holes in the discharge end of the retort cooperate with a chute in the wall of the furnace to serve as discharge holes for the heated metal parts.

3,779,533

MACHINE MOUNTED CUTTING TORCH

Berwyn E. Etter, 10355 Paradise Blvd., Treasure Island, Fla.

Filed June 15, 1972, Ser. No. 263,269
Int. Cl. B23k 7/10
U.S. Cl. 266—23 T 5 Claims



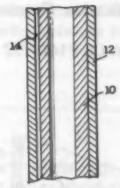
A machine mounted cutting torch is disclosed comprising a support means having a horizontal end portion positioned above the material being cut. A cutting tip support turret is selectively rotatably mounted on the end portion of the support means and has a plurality of spaced apart cutting tips secured thereto extending radially outwardly therefrom. A spring detent means is provided to yieldably maintain the turret in various positions with respect to the material being cut so that the selected cutting tip will be yieldably maintained in an operative position. A conduit means extends through the support means and the turret so that oxygen and industrial gas are supplied only to the cutting tip which is in the operative position. Means are provided to prevent the escape of gas from the turret. Control means is provided for supplying the desired oxygen and gas volumes and ratios to the cutting tip.

3,779,534

DEVICE FOR COOLING A TUYERE OF A REFINING CONVERTER

Pierre Leroy, St. Germain en Laye; Marcel Gombert, Moyeuvre-Grance; Metz Queuleu, Moyeuvre-Grance, and Emile Sprunck, Moyeuvre-Grance, all of France, assignors to Creusot-Loire a societe anonyme, Paris, France

Division of Ser. No. 50,393, June 29, 1970, abandoned. This application May 15, 1972, Ser. No. 253,400
Claims priority, application France, July 8, 1969, 6923145; Nov. 13, 1969, 6938923; June 23, 1970, 6923078
Int. Cl. C21c 5/34
U.S. Cl. 266—41 4 Claims



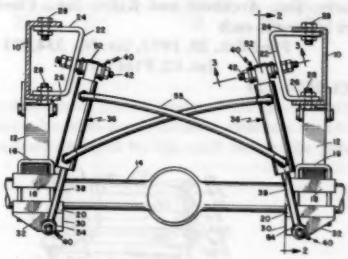
Means for cooling a tuyere of a refining converter having two separate feed systems, which comprises an axial circuit for the oxidizing gas and a peripheral circuit for the cooling agent, wherein a cooling liquid, such as water under pressure, carbon dioxide in the liquid state or a hydrocarbon-containing liquid is injected into the peripheral circuit in lieu of a cooling gas.

3,779,535

SAFETY STABILIZER AND SHOCK ABSORBER SYSTEM

Walter L. Strand, 16546 Gabarda Rd., San Diego, Calif.

Filed Dec. 20, 1971, Ser. No. 209,743
Int. Cl. B60g 11/26
U.S. Cl. 267—64 1 Claim



An improved stabilizer and shock absorber system for road vehicles with spring axles such as automobiles and trucks and particularly but not exclusively adaptable to the rear axles of campers, housecars, trailers, certain trucks and vans where pronounced tendencies to sway, lean and pitch are experienced. The disclosed system employs at least one pair of opposed cylinders which will ordinarily be mounted in front of the rear axle of the vehicle and the cylinders are connected in cross-over arrangement and inclined transversely of the vehi-

cle, that is, upwardly and toward each other, for more efficient reaction to individual wheel movement, recognizing that when one side of the vehicle is lowered, the opposing or driven cylinder, by reason of its inclination, thrusts with a sidewise component force as well as vertical within the limits imposed by the spring suspension to lower the other side of the vehicle and thus to prevent leaning. There is also a pronounced tendency for vehicles such as those mentioned above to exhibit "-highway bounce" or "gallop" under certain road and driving conditions, this action involving distinct pivotal movement about the rear and front axle regions, again within limits imposed by the spring suspension, and the cylinders are therefore also inclined longitudinally of the vehicle. Shock absorbing action as such is further accomplished by providing an air cushion at the top of each cylinder.

3,779,536

BUFFER OR FENDER

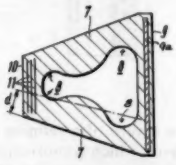
Hans-Peter Lachmann, Cologne, Germany, assignor to Clouth Gummiwerke AG, Cologne, Germany

Filed Jan. 31, 1972, Ser. No. 222,079

Claims priority, application Germany, Jan. 29, 1971, P 21 04 212.6

Int. Cl. F16f 7/12

U.S. Cl. 267—140 **7 Claims**



A buffer of elastomeric material forming a hollow body which has two legs spaced from each other in the direction in which the buffer exerts its main cushioning action and also has two additional legs arranged opposite and in spaced relationship to each other while interconnecting the end portions of said first legs, one of said first legs having bendable elastic insert means therein limiting the elasticity to about half of the flexibility of said additional legs.

3,779,537

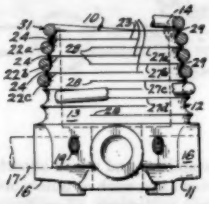
CONE APPARATUS

Gary B. Kalister, Medina, Ohio, assignor to Napoleon Spring Works, Inc., Archbold and Kalco, Inc., Cleveland, Ohio, part interest to each

Filed Feb. 20, 1973, Ser. No. 334,091

Int. Cl. F16f 1/12

U.S. Cl. 267—179 **8 Claims**



The invention is a cone for use with, for example, a torsion spring in a counterbalancing mechanism of a door. The cone body has a frusto-conical exterior surface. A first plurality of spaced partially circular ridges are provided on the exterior surface. Each of the ridges has first and second ends adjacent the surface and a central portion spaced above the surface. A second plurality of spaced partially circular ridges are alternately disposed between respective ones of said first plurality of ridges. The second plurality of ridges have first and second ends adjacent the surface and central portions spaced above the surface at locations opposed to the central portions of the first plurality of ridges. The cone threadably receives either right-or left-hand wound springs.

3,779,538

MACHINIST VISE

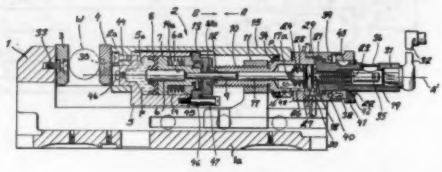
Gunter Horst Rohm, Muhlstrasse 9, 7927 Sontheim/Brenz, Germany

Filed Oct. 18, 1971, Ser. No. 189,871

Claims priority, application Germany, Oct. 17, 1970, P 20 51 119.7; Oct. 23, 1970, P 70 39 210.8

Int. Cl. B25b 1/02, 1/18

U.S. Cl. 269—23 **13 Claims**



A machinist vise has a sleeve threaded into a support and carrying an axially extensible hydraulic piston-and-cylinder mechanism which in turn carries a vise jaw engageable with another vise jaw carried on the support. A nut is axially entrained by the sleeve and is rotatable relative thereto while a force-transmitting spindle has one end threaded into the nut and another end engaging a small piston of the hydraulic arrangement, a large piston thereof being engaged by the sleeve. A slip clutch is provided between the nut and the sleeve to couple the two together rotationally until the jaws engage the workpiece, and then decouple the two so that the nut can screw the spindle down to pressurize the hydraulic mechanism at an increased mechanical advantage via the small piston. As the spindle is screwed down it pulls the slip clutch open to insure decoupling of the sleeve and nut.

3,779,539

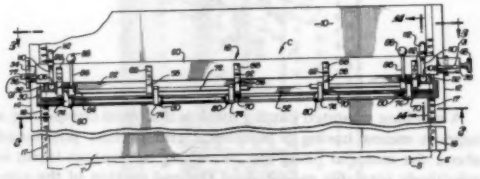
HOLDING APPARATUS FOR SHEET MATERIAL

David F. Ziers, Montebello, Calif., assignor to O/B Masco Drapery Hardware Company, Compton, Calif.

Filed May 16, 1972, Ser. No. 253,833

Int. Cl. B23q 3/00, 3/02; D06c 3/08

U.S. Cl. 269—91 **22 Claims**



Apparatus for clamping drapery and other sheet material placed upon a table, which comprises an elongate body or carriage which is movable along the table and which can be

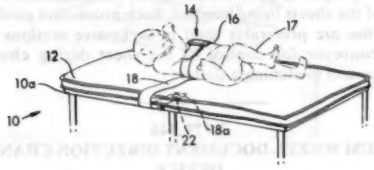
secured in any desired position, supporting means pivotally mounted on such body and extending forwardly thereof in a first position of such supporting means, an elongate clamping member extending lengthwise of the body below the supporting means in such first position thereof, means mounting the clamping member on the supporting means for vertical movement with respect thereto and into and out of engagement with the sheet material placed on the table, means for retaining the clamping member in a position above the table and out of contact with the sheet material and means for shifting such clamping member downwardly and into clamping engagement with the sheet material on the table. Important features of the invention include means for pivotally moving the supporting means and the clamping bar to a second position rearwardly of the forward edge of the elongate body to permit a full view of the edge portion of the sheet material adjacent the forward edge of the elongate body and means releasably locking the supporting means in each of the first and second positions thereof.

3,779,540

INFANT'S DRESSING TABLE SECUREMENT

Alban M. Boudreau, Fitchburg, Mass., assignor to Hedstrom Co., Bedford, Pa.

Filed May 22, 1972, Ser. No. 255,800
Int. Cl. A61g *13/00*
U.S. Cl. 269—328 **4 Claims**



A securement for restraining an infant on a dressing table employs a pair of straps and a three-slot-slide fastener. The straps are anchored at one end at opposite sides of the dressing table. Both straps are passed through the center slot in the fastener. Then each strap is looped back through the adjacent outside fastener slot to form a non-sliding anchoring point at the middle of the dressing table top for the two straps. In use, the free ends of the straps are engaged around the waist of the infant and fastened together so that the infant is held securely at the middle of the dressing table.

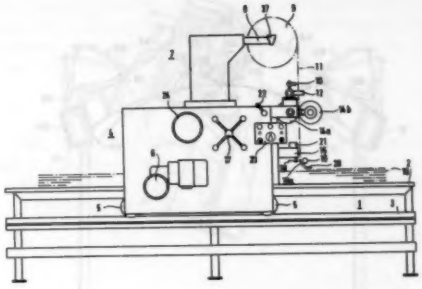
3,779,541

CLOTH-SPREADING MACHINE

Gunter Stumpf, 7421 Mehrstetten, Kreis Munsingen, Germany

Filed Oct. 12, 1971, Ser. No. 188,024
Claims priority, application Germany, June 14, 1971, P 21 29 416.6
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **13 Claims**

A cloth spreading machine. A spreading carriage is mounted to reciprocate to-and-fro along a spreading table. A support for a bale of cloth is carried by holding means mounted on the table, and a calender assembly is mounted on the carriage. The cloth-bale support is adjustable relatively to the carriage in a direction parallel to the direction of reciprocation of the carriage, as by a photocell responsive to changes



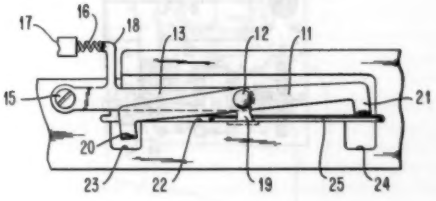
of position of the vertical plane of the web of cloth hanging from the bale and passing between two pull-off rollers of the calender assembly.

3,779,542

GATE MECHANISM FOR CARD READER

John H. Barker, Cary; Norman C. Dribelbis, Raleigh, and Keith B. Stevens, Sr., Cary, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,733
Int. Cl. B65h *9/06, 7/08*
U.S. Cl. 271—60 **4 Claims**



A gate mechanism for a card reader or the like in which the gate mechanism includes a pair of lifter elements which must be simultaneously engaged by the card before the gate will open.

3,779,543

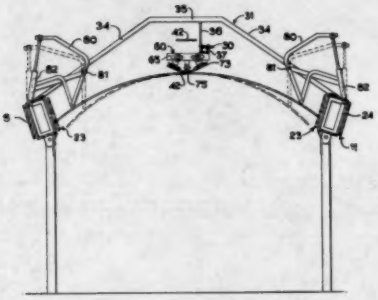
SHEET MATERIAL CONVEYOR

Leonard L. Hayes, Lewiston, Idaho, assignor to Potlatch Forests, Inc., San Francisco, Calif.

Filed Dec. 27, 1971, Ser. No. 212,085
Int. Cl. B65h *29/16*
U.S. Cl. 271—75 **2 Claims**

An apparatus for uniformly controlling the upward arch of wood veneer as it is moved longitudinally by a conveying means from a feeding device, which initiates the arched con-

figuration, to plural release mechanisms. The apparatus consists mainly of an endless belt which frictionally engages the



uppermost surface of arched sheets and maintains contact as the sheets move to the above-mentioned release mechanisms. The lower course of the belt is transversely arched for rigidity.

3,779,544

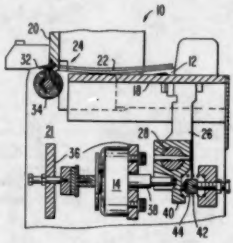
SOLENOID CONTROL SYSTEM

Leonard Wasielewski, Garden City, and James L. Kinner, St. Clair Shores, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 21, 1972, Ser. No. 246,272

Int. Cl. B65h *3/24*

U.S. Cl. 271—115 **4 Claims**



A solenoid control system is provided in which the plunger travel of a card feeder solenoid subjected to varying loads is monitored, solenoid actuating current being discontinued when the plunger reaches a predetermined point such that the duration of solenoid actuation, rather than being fixed, is a function of the varying loads to which the solenoid is subjected.

3,779,545

DELIVERY ARRANGEMENT

Siegfried Schuhmann; Claus Simeth, and Erich Wegel, all of Offenbach, Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG

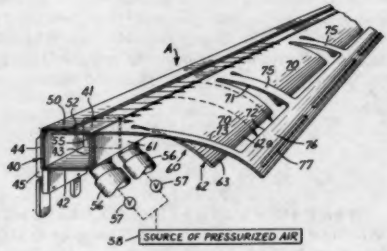
Filed July 7, 1972, Ser. No. 269,704

Claims priority, application Germany, July 14, 1971, P 21 35 105.3

Int. Cl. B65h *29/04, 29/68*

U.S. Cl. 271—183 **14 Claims**

A delivery arrangement including a conveyor and take-off mechanism for delivering a series of printed sheets onto a pile, in which nozzles are provided distributed along the width of a sheet for directing a jet of air in a direction opposite to sheet movement. A guide plate spaced under the sheet and extending upstream from the region of the nozzles serves to confine the jet. Interposed between the guide plate and the sheet path are a series of longitudinally extending friction or land members toward which the sheet is drawn during the course of transport, the jet and friction members serving, together, to decelerate the sheet as it is removed by the take-off mechanism. The guide plate is longitudinally slit at intervals to



form windows defining extensive struck-out portions and intervening frames, the struck-out portions, bent downwardly from the frames, being utilized to confine the jet while the intervening frames provide the frictional engagement. The nozzles are fed by a manifold which is divided into zones which are fed by separate controllable valves in accordance with the width of the sheets being handled. Such nozzle and guide plate assemblies are preferably used in successive sections of the sheet conveyor for control of the sheet during change of direction and to eliminate flutter.

3,779,546

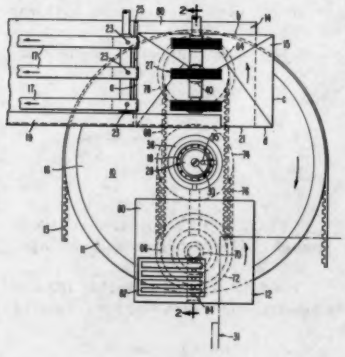
VACUUM WHEEL DOCUMENT DIRECTION CHANGING DEVICE

Edward A. Wojtowicz, Bryn Mawr; James R. Hunter, Chadds Ford, and S. James Lazzarotti, Broomall, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 11, 1972, Ser. No. 313,828

Int. Cl. B65h *29/24*

U.S. Cl. 271—196 **10 Claims**



Apparatus is described which comprises a continuously rotating wheel assembly having disposed thereon one or more vacuum platens for transporting documents in aidirection changes. The apparatus is effective in changing the direction

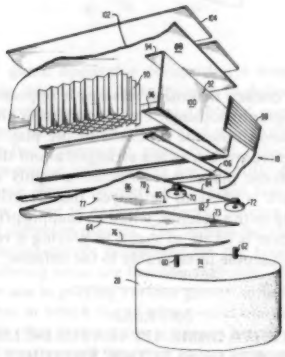
or the direction and orientation of documents, such as mail pieces, being transported in single file at high speed. For example, the device may be employed to abruptly change the direction of a moving document approximately through 90° within substantially the same plane. Additionally, the last-mentioned document may enter the device in a direction parallel to one of its axes (directed along the length of its flat surface) and may exit the device in a direction parallel to the other of its axes (directed along its width). Depending upon the application, the device platens may be arranged to provide a variety of document exit orientations along with a choice of substantially planar direction changes.

3,779,547

BALL GAME COURT WITH HEAT RECEIVING PANEL STRUCTURE

Michael Pappas, Irvington, N.J., assignor to Originetics Incorporated, Hopewell, N.J.

Filed June 30, 1971, Ser. No. 158,191
Int. Cl. A63b *61/00*
U.S. Cl. 272—3 **5 Claims**



A ball game court is provided comprising a plurality of panels which may be removably secured to ground mountings. Each panel may comprise a sandwich-like configuration having upper and lower sheets of weather resistant material. Core material may be disposed between the upper and lower sheets and siding may be secured to the edge portions of each panel to completely enclose the core therein. Electrical heating elements may be provided for heating the surfaces of each panel for snow removal or the like. Ground mountings may be provided with framework for vertically supporting poles used as a part of a frame for supporting netting. Sheet or strip material may be applied to an upper surface of each panel to protect the thin upper sheet from damage and wear and therefore are designed to be replaceable. These strips would also give the panel the resiliency, sound absorption and feel characteristics of a wooden court, and help distribute the load on the core.

3,779,548

FINGER-TRAINING APPARATUS

Atsuhiko Sato, 12, Kayabacho 2-chome, Nihonbashi, Chuo-ku, Tokyo, Japan

Filed Sept. 27, 1972, Ser. No. 289,286
Int. Cl. A63b *23/00*
U.S. Cl. 272—67 **4 Claims**

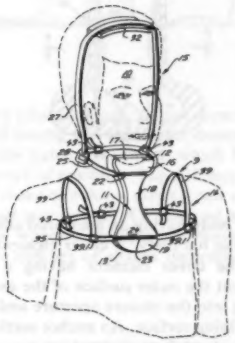
A finger-training apparatus, comprising a grip portion and a forked portion formed in connection with the grip portion. The forked portion includes two spaced arms which support a couple of juxtaposed rollers rotatable therebetween. Gears interconnect the rollers whereby rotation of one of the rollers in one direction will cause synchronous rotation of the other roller in an opposite direction.

3,779,549

HEAD BRACE FOR HOCKEY PLAYERS

John Harold MacNeil, Burnaby, British Columbia, Canada, assignor to Michael Pisesky, British Columbia, Canada

Filed Apr. 21, 1972, Ser. No. 246,369
Int. Cl. A63b *71/02, 21/18*
U.S. Cl. 273—1 B **4 Claims**



A head brace for hockey players having a strut adapted to fit between a player's chin and his sternum, and head and chest strap assemblies for securing upper and lower ends of the strut to the player's head and body so as to restrain downward freedom of movement of the player's head, but not side movement.

3,779,550

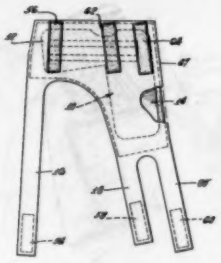
WRIST BRACE

Samuel M. Benoun, Garden Grove, and Roger F. David, Inglewood, both of Calif., assignors to The Align-A-Wrist Company, El Segundo, Calif.

Filed Feb. 22, 1972, Ser. No. 227,877
Int. Cl. A63b *71/14*
U.S. Cl. 273—54 B **3 Claims**

A wrist brace having a unitary support member with a rigid forwardly extending section and a bendable laterally extending section for partially wrapping around the thumb-side of

the forearm. A strap member connected to the forwardly extending section is designed to encircle the hand immediately behind the knuckles and in front of the thumb, and two more



strap members connected to the forwardly and laterally extending sections are designed to encircle for the forearm immediately behind the wrist joint.

3,779,551

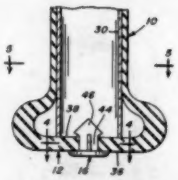
INDICATOR ELEMENT FOR BALL BAT

Richard C. Wilson, Arcadia, Calif., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 10, 1971, Ser. No. 205,994

Int. Cl. A63b *59/06*

U.S. Cl. 273—72 A **7 Claims**



A tubular bat body having an apertured end closure covering one end of the bat body. A cover element secured to the end closure. The cover element having a head disposed generally adjacent the outer surface of the end closure and a shank extending into the closure aperture and in contact with the aperture defining surface. An anchor section formed as an extension of the shank having shoulder means in locking engagement with the closure inner surface. The anchor section may have pilot means for facilitating insertion of the shank into the closure aperture.

The cover element or indicator has means providing information regarding one or more bat properties. The shank may have a generally web-like configuration with substantially parallel opposed marginal edges and stiffener fins may be provided. The anchor section may be substantially triangular with the base of the triangle serving to provide locking shoulders and the other sides providing the pilot surfaces.

3,779,552

AUDIBLE GAME

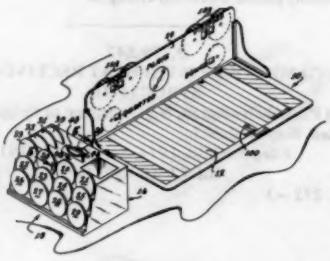
Gordon H. Buck, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 16, 1971, Ser. No. 208,668

Int. Cl. A63f *9/00*

U.S. Cl. 273—88 **1 Claim**

A simulated football game or other strategy game, wherein the opposing strategy of two players is employed to select phonograph record tracks. Each track includes a voice recording which sounds like a sports announcer describing a play based on the strategies of the opposing teams, and describing the outcome of the play. The offense player selects one of several records, each record having a label describing a different offensive strategy, and inserts the record into a phonograph so that the defensive player cannot see the label. The record has several markings spaced thereabout indicating different defensive strategies, and the defense player turns the



record until a chosen defensive strategy is opposite a pointer on the phonograph housing. The phonograph then plays a record track describing the outcome of the play. The leadin portions of the record tracks are arranged about the record so that if the defense player has selected a highly appropriate strategy, a track is likely to be played that describes an outcome favorable to the defense, while an inappropriate defense strategy selection is likely to result in playing a record track describing an outcome unfavorable to the defense.

3,779,553

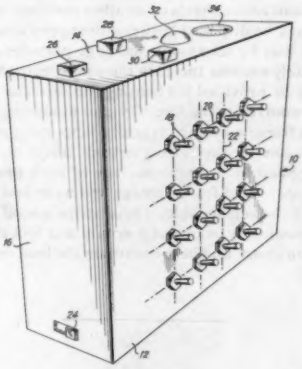
COMPETITIVE GAME APPARATUS INCLUDING GROUPS OF ELECTRIC SWITCHES

Michael Secter, 305 Canal St., New York, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,338

Int. Cl. A63f *3/00*

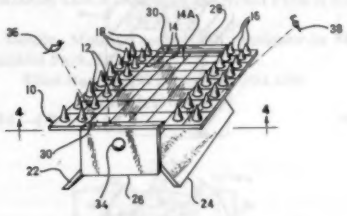
U.S. Cl. 273—130 AB **16 Claims**



As a competitive game, there is provided a casing having opposite faces on which are arranged respective matrices of switches. The switches of each matrix are connected to each other via switches of the other matrix. Proper operation of switches in both matrices can result in the formation of a continuous circuit along a coordinate of one of the matrices at any

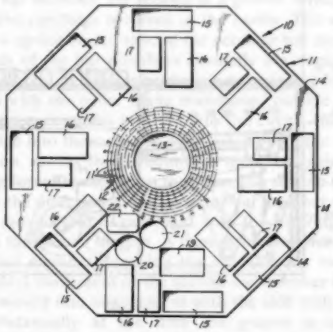
given time. A power source and respective indicators show which group includes such continuous circuit. The continuous circuit can be opened by operation of a switch in the other matrix. A clock is used to show the cumulative advantage which one matrix has over the other. Additional matrices can be connected to the basic matrices.

3,779,554
BOARD GAME APPARATUS
John R. Brix, 2301 42nd Ave., San Francisco, Calif.
Filed Oct. 27, 1972, Ser. No. 301,437
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 B **10 Claims**



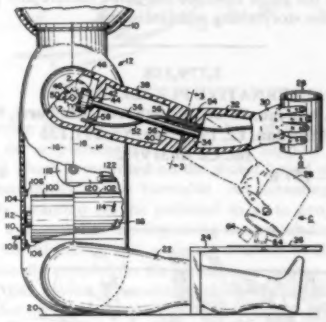
A board game apparatus comprising a transparent game board having intersecting lines thereon to define a plurality of game piece receiving areas. A plurality of game, or playing, pieces are provided which are formed with bottom surfaces to stand upon the transparent game board, which bottom surfaces are provided with indicia for identification of the individual game pieces. Mirrors are located beneath the transparent game board to expose different playing board areas to the view of different players. The indicia-bearing bottom surfaces of playing pieces positioned on the board within such reflected viewing areas are thereby viewable. The apparatus is adapted for use in playing various games including a modified form of chess in which the playing pieces are divided into two groups, with the pieces of one group being visually distinguishable from those of the other group as viewed from above as by use of different colors, shapes, or the like for the groups. Individual chessmen are identified by suitable indicia on the bottom surfaces of the playing pieces indirectly viewable by reflection in said mirrors.

3,779,555
BOARD GAME APPARATUS
Louis Wimberly, 203 W. Chapin, Litchfield, Ill.
Filed Sept. 22, 1971, Ser. No. 182,664
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 D **1 Claim**



A horizontal table of octagonal shape and which at its center has a dice receiving depression that is surrounded by concentric rows of colored circles each of which intersects a plurality of openings, a rectangular depression upon the upper surface of the table and located near the edge of each side and each of the rectangular depressions being of a different color than the others, the present table also including wagering boards located close to the colored depressions, and the table further including a conversion chart and a single bank cut out depression, cruise pool depression and a bounding main pool depression, the game being played with dice and chips between several competitive players.

3,779,556
DIE, GAMEBOARD AND DIE THROWING DOLL
Frank T. Johmann, 49 Hampton Dr., Berkeley Heights, N.J.
Division of Ser. No. 44,063, June 8, 1970, Pat. No. 3,684,291.
This application July 31, 1972, Ser. No. 276,735
Int. Cl. A63f *3/00, 9/04*
U.S. Cl. 273—134 A **8 Claims**



This invention relates to toys. In one aspect, the invention relates to a doll having movable hand driven by an electric motor, preferably battery operated, which hand can move through a sequence of positions. The doll may be constructed so its hand will shake and throw down a pair of dice placed in its hand, and thus may be part of a game set including a game board, and dies wherein markers are moved on the game board a certain number of spaces determined by throwing dice.

3,779,557
PSYCHOLOGICAL TESTING AND THERAPEUTIC BOARD GAME APPARATUS
Nathan I. Kritzberg, and Richard Gardner, both of Tenafly, N.J., assignors to Psychotherapeutic Devices, Inc., New York, N.Y.
Filed July 30, 1971, Ser. No. 167,372
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 D **11 Claims**

A game includes a stimulus board having a number of emotionally significant words arranged thereon. Lettered playing pieces are employed to permit players to complete words on the board and thus receive an intermediate reward. The word completed is used as a jumping off point for storytelling, answering questions about the story told and dramatizing the story told. All of these additional steps in the game provide additional intermediate rewards. White squares and white playing pieces permit undirected storytelling. Gold playing pieces and gold squares require the selection of one of a series of

cards that provide a very directed type of storytelling. Intermediate rewards during the game and more concrete rewards

COOKIE BLOOD DOLL
OLL REGG A
WD L WEEP A D U
C DREAM PIG
CRIPPLED B F H
Y O A STRONG T
PWRONG BAD A A E
RI E Y S I T R
IN LADY SCOLD HEN
N Y N
C G MAN T H
I FIRE I E O U
P FOOT BARE ANGRY N
A O E L N G
LITTLE A P L R
O FATHER S WORRY
JOY E W V
T S PET O MESS
SHOOT A TORN
D SLY D JUDGE

at the end of the game enhance the game feature and provide an incentive for storytelling and fantisizing.

3,779,558

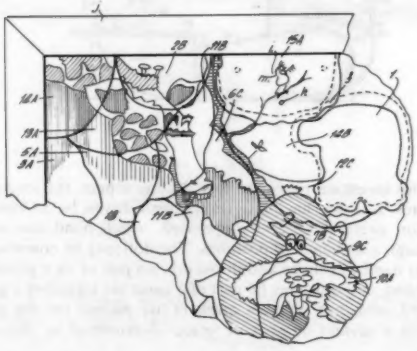
ALTERNATIVE PUZZLE SYSTEM

Claude R. M. Moreau, 85-06, Sixtieth Ave., Elmhurst, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,135

Int. Cl. A63f 9/12

U.S. Cl. 273—157 R **4 Claims**



A puzzle comprising a plurality of pieces which can be assembled in more than one configuration, either as a three dimensional, recognizable shape or as a two dimensional surface which presents a graphic representation.

3,779,559

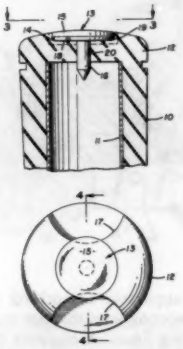
GOLF CLUB GRIP AND MARKER

James H. Taylor, Barberton, Ohio, assignor to The Kosar Gulf Development Laboratory, Inc., Cuyahoga Falls, Ohio

Filed Apr. 26, 1972, Ser. No. 247,790

Int. Cl. A63b 53/00

U.S. Cl. 273—162 D **2 Claims**



A resilient golf club handle grip having a socket at its outer end for removably holding a spiked marker disk. The side wall of the socket resiliently grips the disk and the spike is resiliently gripped in a hole in the bottom wall of the socket. Diametrically opposite notches in the side wall allow a person's thumb and finger to engage the edge of the disk for axial removal of the marker.

3,779,560

SELECTIVE TAPE RECORDER FOR ENDLESS TAPE CARTRIDGES

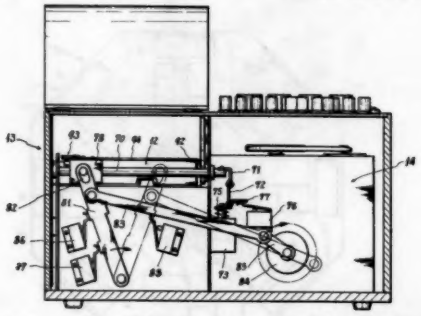
Tuneo Yokata, Osaka, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan

Filed Aug. 16, 1971, Ser. No. 171,846

Claims priority, application Japan, Apr. 30, 1971, 46/28756; Apr. 30, 1971, 46/28757; Apr. 30, 1971, 46/28758; Apr. 30, 1971, 46/28759; May 18, 1971, 46/33757; May 18, 1971, 46/33758; May 18, 1971, 46/33759; May 18, 1971, 46/33760

Int. Cl. G11b 5/00

U.S. Cl. 274—4 F **6 Claims**



A selective tape recorder for a plurality of endless tape cartridges comprises storing means for storing a plurality of endless tape cartridges, playing means for reproducing the sound tracks of the tape, means for carrying the cartridge

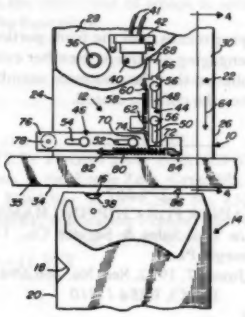
from the storing means to the playing means and from the playing means to the storing means, and control means for controlling the storing means, the playing means and the feeding means electrically and correlatively, whereby selection of the desired cartridge from the stored cartridges, conveyance and feed of the selected cartridge to the playing means, sound reproduction and return of the cartridge can be automatically performed.

3,779,561

CARTRIDGE LOCKING MECHANISM FOR A TAPE PLAYER

Donald J. Dattilo, Mount Prospect, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Nov. 8, 1972, Ser. No. 304,686
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 B **9 Claims**



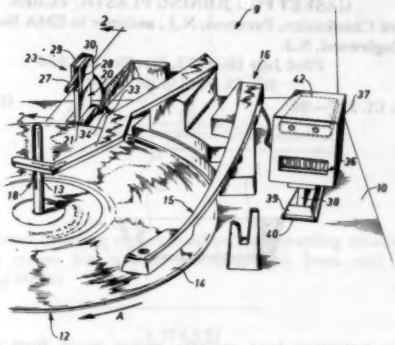
A cartridge locking mechanism for use in a tape player including a chassis having at least one wall connected at opposite ends to side walls extending perpendicular thereto to form a cartridge receiving cavity having an open end through which a cartridge is received, includes an actuator bar member mounted on the one wall for movement in the direction of insertion of a cartridge into the cavity. A portion of the actuator bar member extends into the cavity for engagement with a cartridge inserted thereinto. The actuator bar member is spring biased toward the open end of the cavity. A second bar member is also mounted on the one wall for movement transverse the movement of the actuator bar member and includes a roller mounted on the end thereof farthest from the actuator bar member, for receipt in a groove formed in a side wall of the cartridge received in the cavity. The second bar member is spring biased toward the actuator bar member. Adjacent ends of the bar members normally are engaged so that the second bar member is held against the spring bias applied thereto with the roller being maintained outside of the cavity while no cartridge is inserted into the cavity. Insertion of the cartridge into the cavity in engagement with the actuator bar portion, moves the actuator bar member against the spring biasing force there-against to release the second bar for movement in the direction of the actuator bar member so that the roller is moved into engagement with the cartridge side wall and into the groove therein. A cam surface on the end of the second bar member engaging the actuator bar member provides gradual movement of the second bar member so that the roller is moved into engagement with the side wall of the cartridge substantially at the time the groove is aligned therewith. Withdrawal of the cartridge from the cavity forces the roller from the groove, thereby to move the second bar member against the spring biasing force to permit the return of the actuator bar member to its normal position.

3,779,562

PHONOGRAPH STYLUS USE COUNTER

Christopher David Gower-Rees, Toronto, Ontario, Canada, assignor to Beverly Walton, Ontario, Canada

Filed Sept. 20, 1971, Ser. No. 181,726
Int. Cl. G11b *27/36, 17/08*
U.S. Cl. 274—10 R **32 Claims**



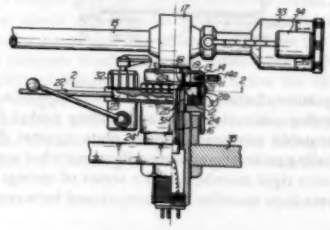
A device for counting the number of record disc sides played on a phonograph includes a support member or pedestal which is mounted on the motor board of the phonograph outwardly of the turntable. An actuating member is pivotally mounted on the pedestal so as to project into the path of a record disc moving along the upstanding axial spindle of the turntable and a digital counter is electrically or mechanically coupled to the actuating member so that, as a record disc moves downwardly along the axial spindle, the digital counter is caused to undergo unit advance actuation whereas no such actuation occurs on removal of a record disc upwardly along the turntable spindle.

3,779,563

DEVICE FOR ERASING INSIDE FORCE OF PICKUP ARM OF RECORD PLAYER

Kiyosi Irisawa, 11-30 Nakanole 1-chome, Shinagawa-shi, Tokyo, Japan

Filed May 24, 1972, Ser. No. 256,400
Int. Cl. G11b *3/12*
U.S. Cl. 274—23 R **9 Claims**



The device comprises a pair of ring-shaped magnets each of which is magnetized on one side only so that the N and S poles are formed in diametrically opposed relation on the magnetized side. The ring-shaped magnets are mounted on a pickup arm supporting shaft in such a manner that their magnetized faces are opposed to each other, with one of the magnets being arranged slidable on the shaft to enable to adjust the distance between the two opposed magnets and the other magnet being arranged rotatable at its fixed position on the

supporting shaft along with the pickup, arm so that the pickup arm operates in a manner such that it is given an attractive or repulsive force of the magnets in a direction opposite to the inside force such that the curve of variation of the turning force caused by displacement of the magnetic poles will substantially coincide with the inside force variation curve.

3,779,564

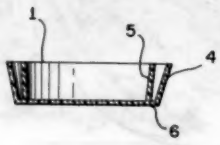
GASKET FOR JOINING PLASTIC TUBES

Mark Chookazian, Paramus, N.J., assignor to EMA Bond Inc., Englewood, N.J.

Filed July 10, 1972, Ser. No. 269,936

Int. Cl. F16j *9/20, 15/14*

U.S. Cl. 277—80 **10 Claims**



An induction heat sealable gasket made from a thermoplastic material having ferromagnetic particles uniformly dispersed therein, the gasket comprising a ring base, a first wing extending upward and outward from the ring base, and a second wing extending upward from the ring base.

3,779,565

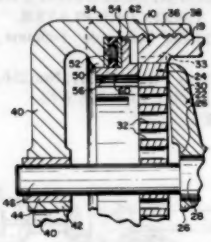
COMPOSITE EXPANSIBLE BIASING AND SEALING GASKET

Walter R. Witte, Des Plaines, Ill., assignor to Speco, Inc., Schiller Park, Ill.

Filed Mar. 6, 1972, Ser. No. 231,909

Int. Cl. F16j *15/12*

U.S. Cl. 277—123 **2 Claims**



A meat grinder characterized by the provision of a novel expansible, spring-assisted biasing and sealing gasket for urging the non-rotatable perforated shear plate against the rotary cutter including an intermediate resilient member sandwiched between outer rigid members and a series of springs disposed in the intermediate member and compressed between the rigid members.

3,779,566

WORKPIECE STOP FOR A COLLET

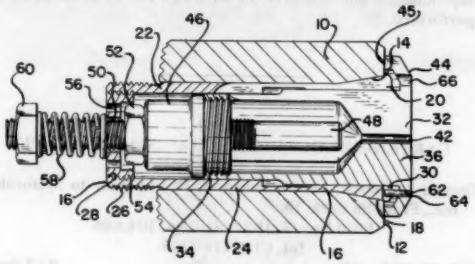
Willis Tarbox, Big Flats; Vincent Dolan, and Ralston L. Harman, both of Elmira, all of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.J.

Filed Dec. 3, 1971, Ser. No. 204,612

Int. Cl. B23b *31/20*

U.S. Cl. 279—1 S **29 Claims**

A work gripping device for a machine tool spindle comprising a collet for mounting on the spindle, a stop insert member in the collet and having front and rear portions, a stop member, means for mounting the stop member in the stop insert member, the front portion of the stop insert member including work gripping means, and the front portion further including a spindle engaging abutment member extending radially beyond the collet so that the abutment member may contact the spindle when the collet is closed.



3,779,567

TOOL RETAINER FOR CHIPPING HAMMERS

James C. Boyd, c/o Tool Sales & Service Co., 1137 Electric Ave., East Pittsburgh, Pa.

Filed June 27, 1972, Ser. No. 266,694

Int. Cl. B25d *17/10*

U.S. Cl. 279—19.1 **1 Claim**

This disclosure relates to a retainer for the reciprocating chisel of a chipping hammer, of the snap-over, spring yoke type.

3,779,568

SKI CARRIER

Nobuyuki Wakabayashi, 11-3, Senju-Higashi 2 chome, Adachi-ku, Tokyo, Japan

Filed Oct. 29, 1971, Ser. No. 193,868

Int. Cl. B62b *13/18*

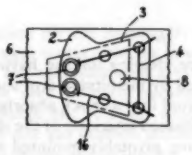
U.S. Cl. 280—9 **1 Claim**

A ski carrier is formed by providing wheels on the inside

surface of a ski-shaped base plate bowed at the tip and providing a clamp for clamping the butt of the skis on the end of a

resilient arm the other end of which is rotatably fixed to the rear end of the base plate.

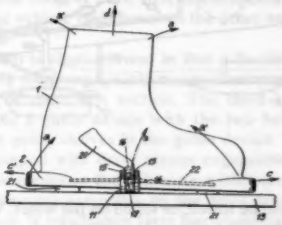
3,779,569
SAFETY FRONT JAW FOR SKI BINDINGS
Rene Ramillon, 3, rue Emile Zola, Grenoble, France
Filed Apr. 8, 1971, Ser. No. 132,324
Claims priority, application France, Apr. 14, 1970, 7013488
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **5 Claims**



This releasable front hold-down device or toe clamp for ski binding has a boot-engaging jaw adapted to shift laterally within a predetermined range of displacement beyond which the toe end of the ski boot is released. It comprises to this end at least one pair of links dispersed symmetrically on either side of the pivot pin of the body of the device and formed with cam-shaped front ends engaging corresponding rollers carried by the base plate of the device; inner projections are also formed on these links for engagement by a ball through a spring of adjustable pressure, this spring and ball being received in a longitudinal bore of the body.

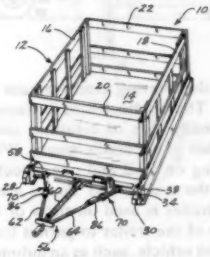
3,779,570
SELF-RELEASING SKI-BINDING
Alois Betschart, Jr., Aegeristrasse 6417, Sattel, Switzerland
Filed Nov. 3, 1971, Ser. No. 195,136
Int. Cl. A63c 9/086
Claims priority, application Switzerland, Aug. 11, 1971, 11783/71
U.S. Cl. 280—11.35 R **6 Claims**

A self-releasing ski binding, for securing a shoe to a ski, comprises first and second coupling means, said first coupling means being provided centrally along the shoe and said second coupling means being disposed at an opposed position on the ski, said first coupling means being resiliently latched to



said second coupling means, said second coupling means including means for manual disengagement from said first coupling means.

3,779,571
SKID PALLET
Magnus P. Ahmling, Rt. No. 1, Brighton, Iowa
Filed May 11, 1972, Ser. No. 252,299
Int. Cl. B62b 15/00
U.S. Cl. 280—19 **8 Claims**

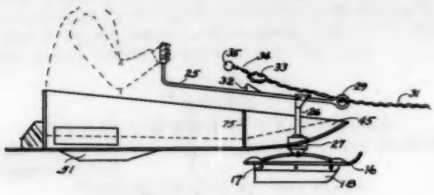


A skid pallet comprises a frame having skid runners thereon, a tongue pivotally connected to the frame for pivotal movement about a horizontal axis, and a pressure bracket connected to the tongue at a point spaced from the horizontal axis. The pressure bracket extends downwardly from the tongue a sufficient distance to protrude below the skid runners when the tongue moves from an elevated position toward a lowered position so that the pressure bracket will engage the ground and provide a leverage fulcrum for lifting the runners in response to lowering of the tongue about the horizontal axis.

3,779,572
CONVERTIBLE SNOW VEHICLE TRAILER
Stanley O. Cheney, Rt. 114 North, Bradford, N.H.
Filed Sept. 24, 1971, Ser. No. 183,439
Int. Cl. B62b 13/08
U.S. Cl. 280—21 R **6 Claims**

This trailer especially designed for use with snowmobiles, has a bottom surface portion which rides in direct contact with the snow. The bow portion curves upwardly. A front-mounted

ski having a tiller causes the trailer to be steerable. A cockpit surrounded by a flotation collar permits the trailer to be used



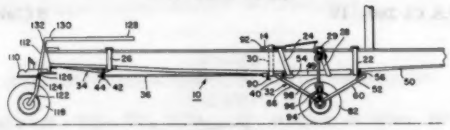
as a boat and be towed, or sailed on the water. Wheels are provided to allow the trailer to be used on land.

3,779,573

LAND SAILING TRAILER

Herbert E. H:son Gullberg, and Stearns Williamson, both of P.O. Box 189, Moylan, Pa.

Filed Dec. 8, 1971, Ser. No. 205,908
Int. Cl. B62d *21/14*
U.S. Cl. 280—34 A **8 Claims**



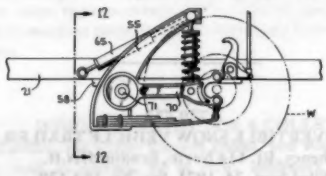
Land sailing trailers having cradle means for supporting a hull of a sailboat. The cradle means is transversely rotatable about a longitudinally axis of rotation, and tension spring means limits rotation of the cradle means. Wheels support the trailers for traveling on land and one wheel is manually adjustable to steer the trailer. Ski skates are secured to the wheels when the trailer is used on snow or ice, and a trailer hitch forms a part of the trailer to permit transporting of the trailer by a powered vehicle, such as an automobile.

3,779,574

RETRACTABLE WHEEL ASSEMBLY

Gordon Y. W. Ow, Alexandria, Va., assignor to Go-Craft Systems, Inc., Honolulu, Hawaii

Division of Ser. No. 883,157, Dec. 8, 1969, abandoned. This application Jan. 12, 1972, Ser. No. 217,211
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.18 **12 Claims**



A family of vehicles for operation on land or in water are provided wherein the frame is external and mates with the bottom of the body by engaging elongated channels formed therein. The frame serves to support the retractable wheel assemblies and the detachable pontoons whereby stress and strain is isolated from the body. Resilient pad means is provided to cushion the engagement of the assembly. A tongue for attachment to a draft vehicle is slidably retractable so as to be out of the way during marine operations; the auxiliary ground supporting wheel and jackscrew being positioned in a horizontal position. The ground engaging wheels are mounted by compact and independently operating retractable mechanism including leaf and coil springs and a shock absorber which enable easy selection and assembly of conponent parts essential for wide range of load requirements of the family of vehicles; the compact design being enhanced by positioning of the main or leaf spring and the coil springs/shock absorber on opposite sides of the wheel suspending action lever. Latch means is provided to hold the assembly in the ground engaging position with hydraulic cylinder means serving to retract the wheels when desired. The wheel retracting mechanism is supported by a spindle which extends from the side of the frame to maintain the uncluttered and compact design of the assembly.

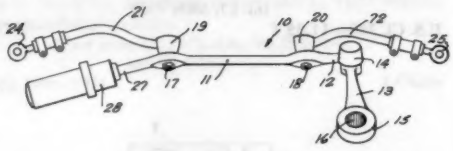
The present invention relates broadly to a family of vehicles having component parts adapted to mate and work together for efficient operation on both land and sea, and more particularly, to a retractable wheel assembly for such vehicles.

3,779,575

STEERING SYSTEM WITH INTEGRAL SHOCK DAMPER

Sylvester S. Mazur, Detroit, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 5, 1971, Ser. No. 169,424
Int. Cl. B62d *7/16*
U.S. Cl. 280—95 R **7 Claims**



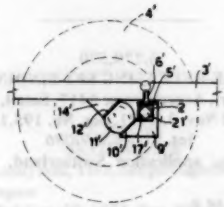
A centerlink type steering linkage having one end of the centerlink supported by the pitman arm and the other end of the centerlink inserted into a shock absorber and terminating in a piston end positioned interiorly of the shock absorber, the shock absorber being pivotably mounted to a frame-carried bracket.

3,779,576

SUSPENSION SYSTEMS

George D. Malcolm, 5 James St., Mangere East, Auckland, New Zealand

Filed Oct. 14, 1971, Ser. No. 189,180
Claims priority, application New Zealand, Oct. 15, 1970, 161732; Mar. 31, 1971, 163250
Int. Cl. B60g *11/60*
U.S. Cl. 280—124 B **17 Claims**



A trailed vehicle has at least one beam axle (but perhaps two with or without load sharing coupling) with the wheels in-

dependently suspended on leading or trailing arm members. The axle is mounted to the chassis or body so that in bump or positive roll conditions when a wheel on one side and the body or chassis move closer together, the axle moves forwardly at that side resulting in the steering of the wheels in a direction to counter the effects of the displacing force acting on the trailed vehicle and thus undesirable effects exerted by the trailed vehicle on the towing vehicle. A "bolt-on" suspension unit has a torsionally resilient beam axle, a primary torsion suspension for the arm members and a secondary suspension allowing forward movement of either side of the axle about one of a pair of transversely aligned pivots in reaction to torque imposed on that side of the axle under bump or positive roll conditions.

3,779,577

SAFETY INSTALLATION FOR THE PASSENGERS OF VEHICLES, ESPECIALLY PASSENGER MOTOR VEHICLES

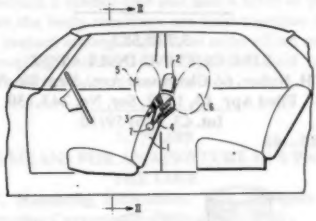
Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 23, 1971, Ser. No. 201,407

Claims priority, application Germany, Nov. 28, 1970, P 20 58 608.7

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **6 Claims**



A safety installation for the passengers of motor vehicles, especially of passenger motor vehicles in which the backrests of the front seats are equipped with a headrest and accommodate within the area of each backrest underneath the headrest two inflatable gas cushions which are so arranged that upon inflation one gas cushion unfolds in front and one gas cushion unfolds behind the headrest.

3,779,578

MOTOR VEHICLE WITH A MECHANICALLY-OPERABLE SAFETY BELT SYSTEM

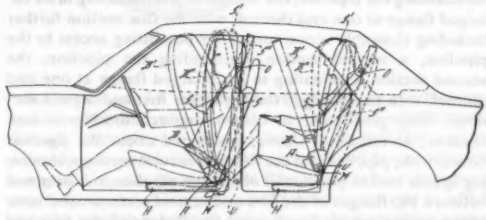
Edwin Spahl, Cologne, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 15, 1972, Ser. No. 234,722

Claims priority, application Germany, July 1, 1971, P 21 32 694.3

Int. Cl. B60n *21/02*

U.S. Cl. 280—150 SB **14 Claims**



A motor vehicle body in which a seat having a backrest is fitted with a mechanically operable three point safety belt system, the belt system having mutually independent shoulder and lap belt sections. The belt system includes a first attachment means receiving one end of the shoulder belt section and a second attachment means receiving one end of the lap belt section, the first and second attachment means being located at upper and lower locations, respectively, of a side wall of the vehicle body. A third attachment means located at the center of the vehicle body receives the other ends of both belt sections.

The belt system is characterized in that a flexible stiffener member carrying drive engageable means is secured to a substantial length of each belt section. The third attachment means comprises a guide device with the two belt sections passing through guide sleeves in the guide device. The guide sleeves are equipped with drive means engageable with the drive engageable means on the belt section stiffeners. The stiffened belt sections are extensible by the drive means into an extended position in which they form free-standing belt loops which, by pivoting the guide sleeves substantially about an axis lying in the plane of the seat backrest, can be pivoted into an inoperative position.

3,779,579

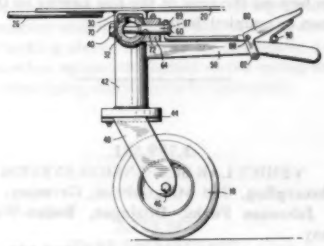
WHEEL MOUNTING ASSEMBLY

Richard Ostwald, Bowling Green, Ky., assignor to Gordon Smith & Co., Inc., Bowling Green, Ky.

Filed July 7, 1972, Ser. No. 269,665

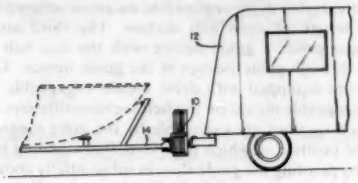
Int. Cl. B60s *9/02*

U.S. Cl. 280—150.5 **15 Claims**



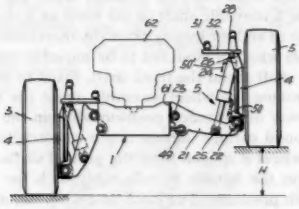
For a vehicle such as an air compressor frame, a wheel mounting assembly including a fixed shaft secured to the vehicle frame by mounting bolts which pass transversely through the fixed shaft and into portions of the vehicle frame. Mounted on the fixed shaft for rotation about the horizontal axis thereof is a movable shaft in the form of a sleeve which has fixed thereto and projecting normally therefrom an arm to which a swivel wheel is mounted to be movable with the arm and movable shaft about the fixed shaft. Fixed to the arm is a handle for moving the wheel assembly about the fixed shaft between a lower or extended position wherein the wheel engages the ground surface and an upper or retracted position wherein the wheel is spaced from the ground surface. A latch is mounted on the handle to releasably lock the wheel assembly in both positions. The latch assembly includes a latch pin mounted in the movable shaft for movement into and out of locking slots radially formed in the fixed shaft. Actuation of the latch pin is by a hand grip pivoted to the main handle and connected to the latch pin by a rod extending along the main handle. The mounting bolts which secure the fixed shaft to the frame are made from material such that should the wheel assembly receive an excessive force such as for example when the wheel assembly is inadvertently left in the lowered position while the compressor frame is being towed, the mounting bolts will shear or rupture to minimize damage to the wheel assembly.

3,779,580
COMBINATION CAMPERSTEP, TIRE CARRIER AND TRAILER HITCH
Jerome P. Thelen, Rt. 3, Clark, S. Dak.
Filed Mar. 3, 1972, Ser. No. 231,479
Int. Cl. B60r *3/00*
U.S. Cl. 280—164 **7 Claims**



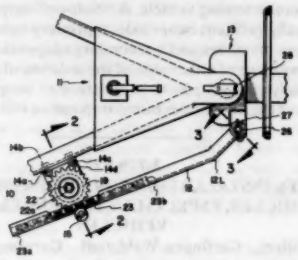
Apparatus for mounting a spare tire on a vehicle, providing a step into the vehicle and towing another vehicle, in which, a bracket is attached to the rear of a vehicle, for example, to the bumper or frame, a tire carrier is pivotally mounted at its lower end to the bracket to permit it to swing from a generally-verticle position to a generally-horizontal position and has a generally flat step formed on its front side, a latch is provided on the bracket to releasably engage the tire carrier and hold it in its vertical position and a trailer hitch is attached to the bottom of the tire carrier, is pivotal with the tire carrier and protrudes beyond the rear of the tire carrier so that a towed vehicle may be coupled thereto.

3,779,581
VEHICULAR SUSPENSION SYSTEM
Hans Scheuerpflug, Bad Mingolsheim, Germany, assignor to Firma Johannes Fuchs, Ditzingen, Baden-Wurttemberg, Germany
Filed Jan. 12, 1972, Ser. No. 217,139
Claims priority, application Germany, Jan. 14, 1971, P 21 01 504.3
Int. Cl. B60p *1/18*
U.S. Cl. 280—95 R **13 Claims**



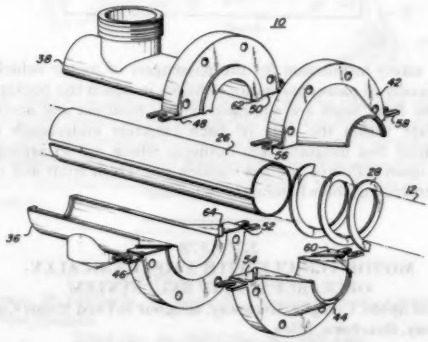
The invention contemplates a vehicle suspension for selectively variable adjustment of track width and ground clearance, wherein the chassis frame is a hollow body containing longitudinally arrayed hydraulic-cylinder mechanism by which the wheels are suspended, the actuating connections to the wheel-positioning arms being by way of bell cranks.

3,779,582
SWAY CONTROL UNIT
Edward B. Hedgepeth, P.O. Box 15394, Salt Lake City, Utah
Filed Nov. 26, 1971, Ser. No. 202,199
Int. Cl. B62d *53/00*; **B60d** *1/00*
U.S. Cl. 280—446 B **5 Claims**



A sway control unit to be linked between a towing vehicle and a towed vehicle and arranged to provide a uniform rotary frictional resistance to lateral weaving or swaying of the towed vehicle with respect to the towing vehicle, without adversely affecting free vehicle or necessary horizontal angular displacement of the vehicles relative to one another.

3,779,583
LINE CUTTING INSULATOR
Frederick H. Nuber, 66 Clearmont Ave., Denville, N.J.
Filed Apr. 13, 1972, Ser. No. 243,730
Int. Cl. F16l *59/16*
U.S. Cl. 285—48 **14 Claims**



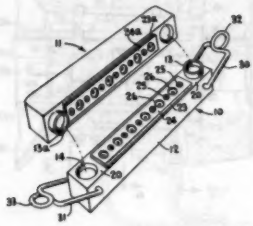
An assembly and method are disclosed for insulating sections of a pipeline with the assembly including a first section surrounding the pipeline, the first section terminating in an enlarged flange at one end thereof, with the first section further including closeable access means for permitting access to the pipeline; a second section surrounding the pipeline, the second section terminating in an enlarged flange at one end thereof, with the enlarged flanges of the first and second sections being positioned in confronting relationship to one another; an insulating sleeve, positioned about the pipeline between the pipeline and the first and second sections; insulating spacer means positioned about the pipeline and disposed between the flanges of the first and second sections; and insulating joining means for drawing the flanges of the first and second sections toward one another. In this manner, after the assembly is positioned on the pipeline, the pipeline can be severed through the access means in the aforementioned first section.

3,779,584

FLUIDIC CONNECTOR

Vladimir Ignatjev, Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 22, 1971, Ser. No. 182,630
Int. Cl. F16l 39/00
U.S. Cl. 285—137 R 2 Claims



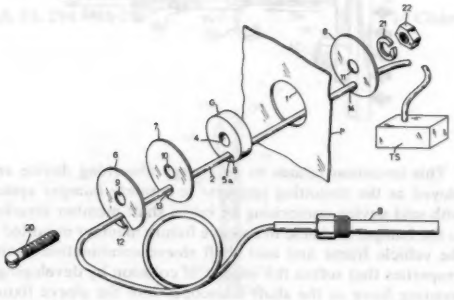
A two-piece type connector assembly for effectively mutually coupling a plurality of fluid conducting passages. Two body members formed from identical molded parts are provided with flat pressure surfaces, each such surface having mounted thereon a rubber-like pad and a layer of plastic film so that when the body members are held together the plastic films are in mutual sealing contact so as to afford an effective air tight coupling between the respective fluid conducting passages formed in said body members.

3,779,585

SEALING MEANS FOR AN APERTURE IN A PANEL OR THE LIKE

Anthony T. Handzlik, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Nov. 17, 1972, Ser. No. 307,399
Int. Cl. F16l 3/04
U.S. Cl. 285—158 4 Claims



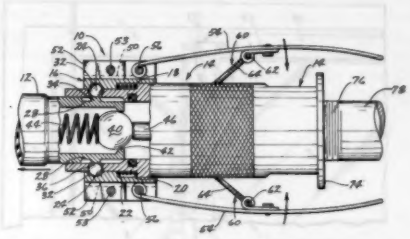
Sealing means for forming a seal between an aperture in a panel or the like and a conduit or the like which passes through said aperture. The sealing means includes a compressible grommet located in the aperture and having adjacent washers alongside the grommet. The washers have peripheral slots which extend inwardly at different angles and in which slots the conduit is located, thus, the washers abutting against one another with their differently inclined slots act to generally close off each other's slots and the washers are compressed against the grommet so the latter seals against the aperture in the panel.

3,779,586

HOSE COUPLING CONNECT AND DISCONNECT MECHANISM

Donald W. Rossiter, Moneta, Iowa

Filed Aug. 10, 1972, Ser. No. 279,546
Int. Cl. F16l 37/00
U.S. Cl. 285—308 10 Claims



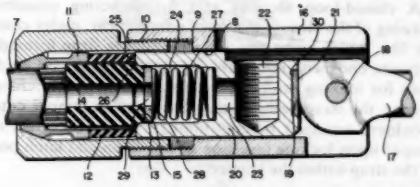
A hydraulic hose coupling including telescopic male and female members having a slidable locking sleeve on the female member. An actuator for the locking sleeve is provided which includes a pair of semi-cylindrical clamping elements having ears on opposite sides to which a pair of oppositely disposed lever elements are pivoted. A pair of oppositely disposed link elements extend from the lever elements towards the coupling and are pivoted at their inner ends to stationary legs having their outer ends secured to the outer end of the female coupling member. The locking sleeve is spring biased towards the male member and inward pivoting of the lever elements causes the locking sleeve to move longitudinally away from the male member against the action of the spring thereby allowing the telescoping members to be separated.

3,779,587

TUBE END FITTING

William H. Racine, P.O. Box 378, Lakeside, Mich.

Filed Aug. 23, 1972, Ser. No. 283,181
Int. Cl. F16l 37/20
U.S. Cl. 285—312 2 Claims



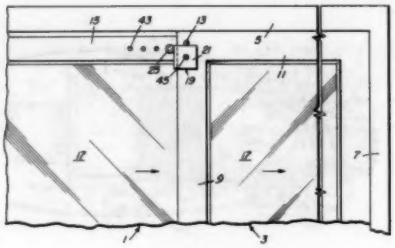
A fitting for mounting to tube ends by actuating quick operating means to translate a ram element inside a body housing against a tubular plug having an opposite end which sealingly compresses against the end of a smooth wall tube. The fitting more advantageously includes a split collet which clamps the circumference of the smooth wall tube simultaneously with compressing the tubular plug by the quick operating means, such as a torque transmitting lever.

3,779,588

SLIDING PANEL LOCK

Raymond T. Raymon, 11618 Highland Dr., Warren, Mich.

Filed Sept. 1, 1972, Ser. No. 285,759
Int. Cl. E05c *5/02*
U.S. Cl. 292—57 **1 Claim**



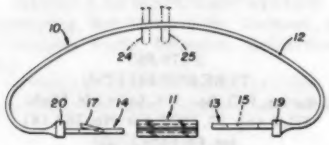
A pair of sliding panels, sashes or other closure means provided with locking means which is mounted on one closure and is operable when said closure is in closed or stationary position to releasably engage and lock the other sliding closure means to prevent said other sliding closure means from being moved to open or partly open position.

3,779,589

FLEXIBLE STRAP-TYPE SEAL HAVING ENCLOSED LOCKING MEANS

Richard A. Patterson, St. Paul, Minn., assignor to The United Seal Company, Columbus, Ohio

Filed Mar. 24, 1972, Ser. No. 237,844
Int. Cl. B65d *55/06*
U.S. Cl. 292—317 **1 Claim**



A closed-loop security seal for detecting unauthorized opening of the closure means of a freight car, meter casing, or the like, which embodies a flexible plastic strap formed at its opposite ends with relatively engageable catch and latch portions for locking insertion within a cooperatively channeled keeper, the strap being further formed with tamper deterring shoulders arranged to conformingly cover the ends of the keeper upon locking insertion of the catch and latch portions of the strap within the keeper.

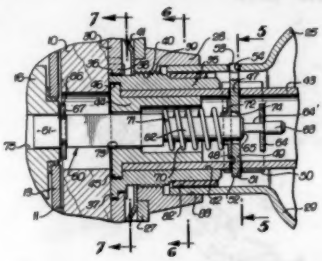
3,779,590

NON REMOVABLE KNOB TRIM

Vernard W. Sanders, and Ronald C. Powell, both of Los Angeles, Calif., assignors to Norris Industries, Inc., Los Angeles, Calif.

Filed Feb. 7, 1972, Ser. No. 223,870
Int. Cl. E05b *3/04*
U.S. Cl. 292—336.3 **7 Claims**

A mortise type lock has outside and inside mounting plates held in place on opposite sides of the door by use of screws accessible from the inside only. A decorative rose covers the outside mounting plate and an internally threaded outside sleeve which engages an externally threaded inside sleeve, in turn fastened to the mounting plate, overlies the rose preventing removal. The shank of an outside knob surrounding a rotatable sleeve has an aperture into which extends a spring



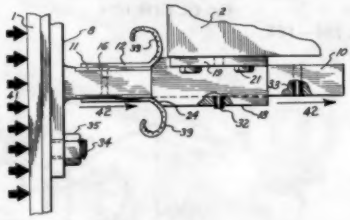
pressed knob retainer for holding the knob on the rotatable sleeve. When the knob and attached parts are mounted on the mortise type lock a central spindle shifts from a position permitting release of the knob retainer to a position extending into the knob retainer to block movement of the knob retainer and release of the knob.

3,779,591

ENERGY ABSORBING DEVICE

William Partington Rands, 6983 Trolley Way, Los Angeles, Calif.

Filed Aug. 23, 1971, Ser. No. 173,813
Int. Cl. B60r *19/00*
U.S. Cl. 293—89 **2 Claims**



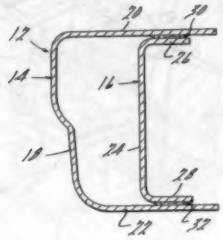
This invention relates to an energy absorbing device employed as the mounting supports in a safety bumper system with said device comprising an initial shaft member attached to the bumper and held in a sleeve fixture member mounted to the vehicle frame and said shaft sleeve combination having properties that soften the impact of collision by developing a resisting force as the shaft telescopes into the sleeve fixture wherein there occurs on the shaft member a mechanical cutting and deforming of longitudinal forms of surface material on the shaft member as said material is forced against abrupt cutting edges on the sleeve member. In a collision, said deforming process absorbs energy and transforms the force transmitted into the vehicle body from that of a sudden shock force into a controlled lesser force, thereby protecting the vehicle from damage in a low velocity collision and minimizing the jolt and rebound backlash experienced by the passengers. Further, the said deformation of material in the device is confined to separable elements fastened to the surface of the shaft member that permits the replacement of the damaged shaft portions and enables the restoration of the bumper to its original pre-collision condition for a relatively low cost.

3,779,592

HIGH STRENGTH VEHICLE BUMPER

Richard R. Golze, Bloomfield Hills, and Richard F. Kienle, Bloomfield Twp., both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 1, 1972, Ser. No. 258,761
Int. Cl. B60r 19/00
U.S. Cl. 293—98 6 Claims



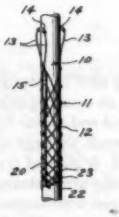
A high strength vehicle bumper resistant to damage caused by impact forces and including a pair of structural members formed from dissimilar metallic materials. Means join the structural members together into a composite member while electrically insulating the dissimilar materials from one another. In a first embodiment of the invention said means comprises an adhesive layer located between the dissimilar materials. In a second embodiment of the invention, said means comprise metal fastener means joining the structural members and shielding means separating and electrically insulating said materials from said fastener means and from each other.

3,779,593

OPEN-MESH SUPPORT GRIP CONSTRUCTION

David H. Neuroth, New Haven, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed May 4, 1972, Ser. No. 250,330
Int. Cl. F16g 11/03
U.S. Cl. 294—86 CG 14 Claims



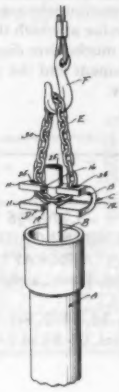
The construction involves a device that is assembled on a conventional wire cable grip to improve the latters' gripping action. The device comprises an elongated rod provided intermediate its length with an adjustable spring seat. A helical compression spring has one end in engagement with the seat and extends in coiled relation around the rod toward one end of the rod. Suitable means connect the other end of the spring to the draft end of the grip and suitable means connect the other end of the rod to the object receiving end of the grip.

3,779,594

PIPE CONSTRUCTION

Edwin T. Monroe, 1 Pleasant Dr., Cameron, W. Va.

Filed June 20, 1972, Ser. No. 264,597
Int. Cl. B66c 1/16
U.S. Cl. 294—91 6 Claims



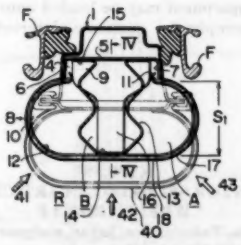
Elevator mechanism for use in lifting and placement of pipe sections having a U-shaped body portion including upper and lower flanges joined by a bight portion, each flange having a lateral slot therein which are aligned for receiving a pipe, and openings through the upper flange at each side of the slot for receiving a flexible elevator lifting member.

3,779,595

PILLAR FOR A BODY OF A MOTOR VEHICLE

Ichiro Suzuki, and Takashi Saito, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Soyota-shi, Aichi-ken, Japan

Filed July 10, 1972, Ser. No. 269,922
Claims priority, application Japan, Oct. 23, 1971, 46/84057
Int. Cl. B62d 25/04; B60r 21/02
U.S. Cl. 296—28 R 4 Claims



This invention relates to a pillar for a body of a motor vehicle.

The pillar comprises a channel-shaped outer pillar component arranged vertically with its open side facing the inside of the room, a channel-shaped inner pillar component fitted in the outer pillar component with its open side facing the inside of the room, the outer pillar component and the inner pillar component being joined to each other to provide a pillar having a closed space therein, portions of the outer pillar com-

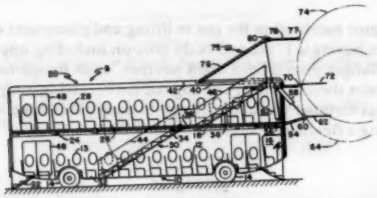
ponent and the inner pillar component at which they are joined being disposed in the vicinity of a door frame, inner panel or other inner side portion of the room so as not to project much into the room, a protector device disposed with its open side facing the open side of the inner pillar component and its opposite edges being disposed near the portion of the inner pillar component at which it is joined to the outer pillar component, the protector device having a width greater than the width of the outer pillar component and being adapted to undergo plastic deformation when subjected to a force of impact higher than the value at which the protector means is set, and a shock absorber mechanism disposed in a space between the inner pillar component and the protector device so as to connect them together.

3,779,596

MOBILE PASSENGER LOADING LOUNGE FOR AIRCRAFT

Henry Ritter, Nashville, Tenn., assignor to Avco Corporation, Nashville, Tenn.

Filed July 28, 1972, Ser. No. 276,083
Int. Cl. B62d *31/04*
U.S. Cl. 296—28 AL **7 Claims**



A lower self-propelled steerable passenger compartment releasably supports an upper passenger compartment on its roof. Both upper and lower passenger compartments have passenger stairs from their floors to their roofs. Extendible ramps at the level of the lower compartment roof and the upper compartment roof permit passengers who have ascended the stairs to be loaded from the compartments directly onto aircraft having loading doors at the level of either ramp. The upper passenger compartment may be loaded onto an aircraft as a module to completely eliminate intervehicle passenger transfer.

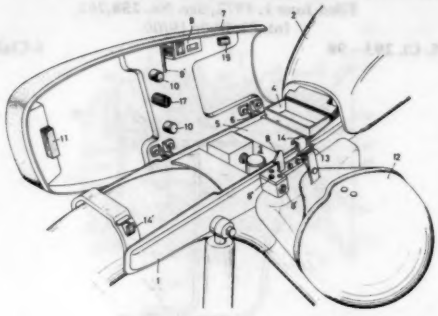
3,779,597

APPARATUS FOR SECURING AN ARTICLE IN A TWO-WHEEL VEHICLE

Masaaki Uchida, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1972, Ser. No. 235,363
Claims priority, application Japan, Mar. 22, 1971, 46/19092
Int. Cl. B60r *11/00*
U.S. Cl. 296—37 **5 Claims**

A helmet or similar article is attached to the body of a two wheel vehicle by hooking its buckle on a hook member on the body of the vehicle. The hook member is positioned on the body so as to be covered by a pivotable seat when the latter is lowered to operative position so that removal of the helmet is prevented. A lockable engaging means is provided between the seat and vehicle body. In order to prevent unhooking of the article from the hook member when the seat is lowered, a



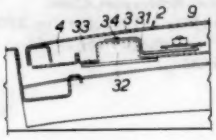
projection is formed in the lower surface of the seat to close any gap which might be formed or alternatively, a recess is formed in the seat in which the hook member is received.

3,779,598

SLIDING ROOFS AND VEHICLES

Frederick Charles Lidington, Birmingham, England, assignor to Weathershields Limited, Birmingham, England

Filed May 4, 1972, Ser. No. 250,275
Claims priority, application Great Britain, Feb. 10, 1972, 6,180/72
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 G **4 Claims**



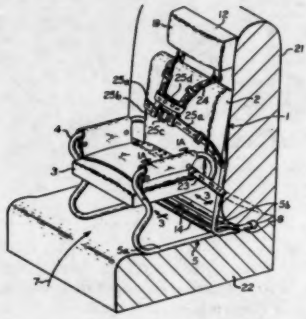
In a vehicle sliding roof incorporating a longitudinally sliding panel for closing an opening in the front part of the roof, a stationary longitudinal rod or bar located under the rear fixed part of the roof extends through a housing mounted on the panel at its rear end. A pair of transverse locking members mounted in the housing are restrained at one pair of adjacent ends against movement with respect to the housing by abutment means in the housing. The locking members are provided with openings through which the rod or bar is passed and at least portions of the locking members containing the openings are normally urged resiliently into operative positions in which they are oppositely inclined with respect to, and lock onto, the rod or bar to prevent relative movement of the panel with respect to the rod or bar only in each of two opposite directions. The engagements between the locking members and the rod or bar are adapted to be released by longitudinal movement of a longitudinal transmission member which is guided in the housing for limited longitudinal movement in a fore and aft direction in response to corresponding movement of a finger-operated control mounted in the panel.

3,779,599

JUVENILE SEATING SYSTEM

Arthur Gottfried, 560 Clinton Rd., Paramus, N.J.

Filed July 8, 1971, Ser. No. 160,598
Int. Cl. A47d *1/10*
U.S. Cl. 297—253 5 Claims



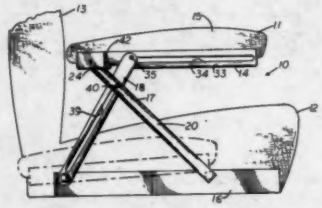
A juvenile seating system including an accessory for cooperation with a juvenile chair so that the latter can be used as a juvenile vehicle seat, the accessory adapted for removably engaging the chair, the accessory having a rigid upwardly extending portion substantially disposed against the back of the backrest of the juvenile chair when the accessory and the juvenile chair engage each other, the accessory being adapted to rest against a backrest of a vehicle seat when the accessory and the juvenile chair are in engaging position and are adapted to be positioned with a vehicle-provided seat belt passing about the juvenile chair urging the accessory against the vehicle backrest, and the accessory having a base complementary to the base of the juvenile chair for the removable engaging.

3,779,600

FOLDABLE ARM REST ASSEMBLY

Howard M. Quakenbush, Monona Village, Wis., assignor to Flexsteel Industries, Inc., Dubuque, Iowa

Filed Sept. 1, 1971, Ser. No. 176,986
Int. Cl. A47c *7/54*
U.S. Cl. 297—417 10 Claims



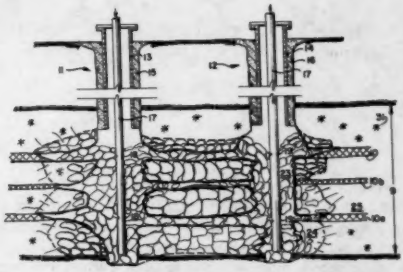
Foldable arm rest assembly for vehicle seats in which first and second pairs of connection means connect to an armrest and seat structure to upper and lower ends of crossed arms, one pair of connection means being pivotal connections and the other including one pivotal and one slidable connection. Locking means are associated with the slidable connection and with the crossing portions of the arms, the locking means being held engaged by gravity and by downward pressure on the arm rest and being releasable by upward movement of the arm rest.

3,779,601

METHOD OF PRODUCING HYDROCARBONS FROM AN OIL SHALE FORMATION CONTAINING NAHCOLITE

Thomas N. Beard, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 770,964, Oct. 28, 1968, abandoned. This application Sept. 24, 1970, Ser. No. 75,061. The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.
Int. Cl. E21b *43/28*
U.S. Cl. 299—4 7 Claims



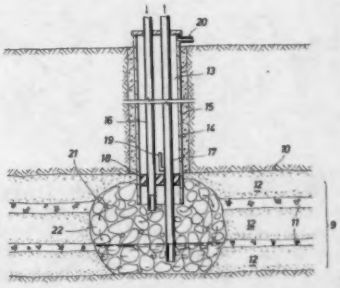
A method of producing hydrocarbons and optionally nahcolite from a subterranean oil shale formation containing zone(s) of nahcolite, by penetrating said formation with at least one borehole and leaching or dissolving the nahcolite from the formation with a solvent fluid so as to form a cavern(s) and/or interconnected cavities, followed by fracturization and/or rubblization of the oil shale surrounding the caverns or cavities, and thereafter injecting into fracturized and/or rubblized zones, a pyrolyzing fluid to effect in-situ hydrocarbon recovery therefrom.

3,779,602

PROCESS FOR SOLUTION MINING NAHCOLITE

Thomas N. Beard, Denver, Colo., and Peter Van Meurs, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 7, 1972, Ser. No. 278,407
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 6 Claims



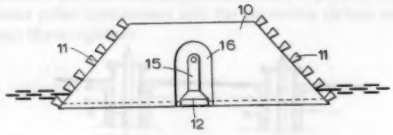
The process of solution mining sodium bicarbonate (e.g., nahcolite) from a subsurface sodium bicarbonate containing, oil shale formation with water is improved by conducting leaching operations at a selected temperature greater than 250°F and adjusting pressure to a particular preferred value for the selected leaching temperature.

3,779,603

MINERAL MINING MACHINES

Angel Davila Baz, Plaza de Castille, No. 1, 3aC, Alcobendas, Spain

Filed Feb. 2, 1972, Ser. No. 222,852
Claims priority, application Spain, Feb. 10, 1971, 388,136
Int. Cl. E21c 27/44
U.S. Cl. 299—34 13 Claims



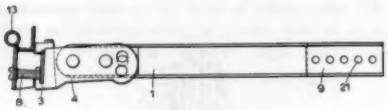
A mineral mining plough of the type which has a body with sets of cutting tools at each end, the machine being guided along a longwall mineral face to strip mineral therefrom. In order to guide the plough so as to cut the face down to the floor level one or more adjustable floor cutters are provided. The, or each, adjustable cutter has a blade with a cutting edge which may be operative in one or both directions of travel of the machine. The adjustable cutter is adjustable so that the cutting edge can be inclined downwardly or upwardly, or aligned parallel to, the floor level of the face. By appropriate adjustment of the cutter the plough can be guided to compensate for any deviation relative to the floor level of the face.

3,779,604

MINERAL MINING INSTALLATIONS

Willy Heyer, Bochum-Gerthe, and Christoph Rassmann, Lunen, both of Germany, assignors to Gewerkshaft Eisenhutte Westfalia, Westfalia, Germany

Filed Feb. 8, 1972, Ser. No. 224,512
Claims priority, application Germany, Feb. 11, 1971, P 21 06 443.7
Int. Cl. E21c 27/35
U.S. Cl. 299—34 15 Claims



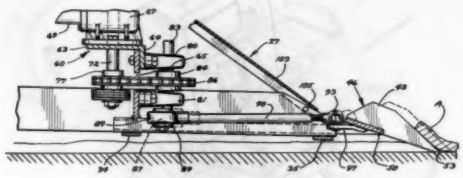
A mineral mining installation composed of a conveyor with a guide member for a plough on one side. The position of the guide member in relation to the floor of a mine working is controlled by means of beams connected to the goaf side of the conveyor. In one construction each beam is pivotably connected to the arms of a U-shaped bracket connected to the conveyor and a locking pin is insertable into various alignable bores in the beam and the arms of the bracket in order to secure the beam in various angular positions. In another construction each beam is composed of a channel member rigidly affixed to a leaf spring. The channel member is connected in the manner of a toggle linkage with a plate affixed to the goaf side of the conveyor and a piston and cylinder unit is connected between the channel member and the plate to effect a change in angular position.

3,779,605

ROOFING REMOVAL APPARATUS

John J. Nieman, 212 E. Main St., New Prague, Minn.

Filed July 28, 1972, Ser. No. 276,123
Int. Cl. E04d 15/00
U.S. Cl. 299—37 2 Claims



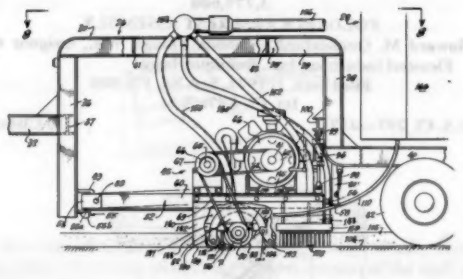
This invention relates to a tractor having detachably secured thereto a roofing removal apparatus, said apparatus comprising a frame having slidable guide rods carrying a cutting head forwardly of said apparatus and a vertically disposed eccentric driving shaft carried by said apparatus and driven by said tractor, said driving shaft having a connecting rod connecting said cutting head thereto for reciprocating action of said cutting head.

3,779,606

PAVEMENT CUTTING MACHINE WITH IMPROVED LIQUID COOLANT SUPPLY

Cecil W. Hatcher, and Gene Warner, both of P.O. Box 1263, El Monte, Calif.

Division of Ser. No. 119,476, March 1, 1971, Pat. No. 3,703,316. This application Aug. 31, 1972, Ser. No. 285,256
Int. Cl. E01c 23/09
U.S. Cl. 299—39 5 Claims



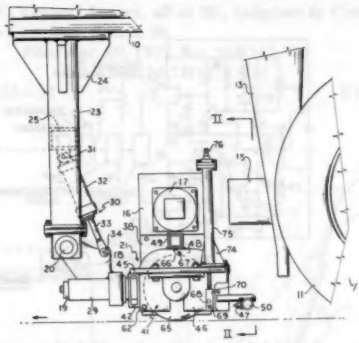
A pavement cutting machine for cutting bumps or grooves. A tractor has a hitch with a cutter trailer and a tank trailer. The tank picks up the sludge from the cutter, filters it and recirculates the filtered water to the cutter. A shroud has a wall around the cutter to provide a vacuum chamber having suction nozzles to pick up the sludge. The nozzles are in the form of upright tubular members having a length sufficient for the lower ends of the nozzles to contact the pavement during operation of the cutter. The cutter and its engine, also the vacuum chamber and nozzles are all carried by a support which is raised or lowered by hydaulic cylinders. The cutter device is a single cutter or two cutters having overlapping shafts at their inner ends with the spacing between adjacent cutting disks the same as on each cutter for cutting grooves or overlapped for cutting bumps.

3,779,607

SUPPORTING CUTTER ASSEMBLIES FOR MULTIPLE GROOVING OF PAVEMENT

Donald C. Staab, Warrington, Pa., assignor to Cardinal Industries, Incorporated, Conshohocken, Pa.

Filed Dec. 27, 1971, Ser. No. 212,475
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 13 Claims



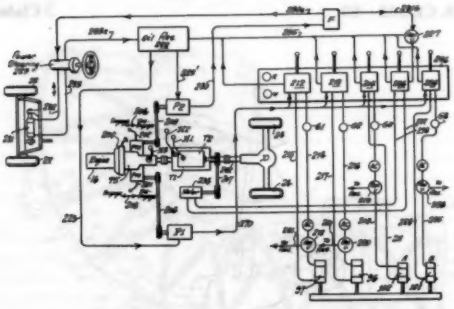
Vehicular apparatus for use in multiple grooving of pavement is provided with generally cylindrical cutter assemblies having cutter heads with laterally spaced blades rotatable to groove pavement when in contact therewith. Each cutter assembly is mounted to be raised and lowered uniformly and also to be tilted relative to the vehicle frame. Adjustable depth wheels at each end of a cutter assembly control the groove depth.

3,779,608

PAVEMENT CUTTING MACHINE WITH SELECTED DRIVE SYSTEM

Cecil W. Hatcher, and Gener Warner, both of P.O. Box 1263, El Monte, Calif.

Division of Ser. No. 119,476, March 1, 1971, Pat. No. 3,703,316. This application Aug. 18, 1972, Ser. No. 281,952
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 8 Claims



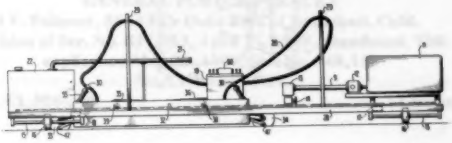
A pavement cutting machine for cutting bumps or grooves. A tractor has a hitch with a cutter trailer and a tank trailer. The tank picks up the sludge from the cutter, filters it and recirculates the filtered water to the cutter. One or more hydraulic cylinders for the cutter or cutters act against a frame member which supports the tank whereby the weight of the tank snubs the cutter or cutters. The tractor has an engine for driving the traction wheels of the vehicle at high speed when moving from one location to another. The tractor has an alternative hydraulic drive operated by the engine when the engine is disconnected from the traction wheels, the hydraulic drive having a low speed transmission to the traction wheels.

3,779,609

CONCRETE CUTTING MACHINE

Robert E. James, Rt. No. 1, P.O. Box 414, Griffin, Ga.

Filed Oct. 27, 1972, Ser. No. 301,535
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 8 Claims



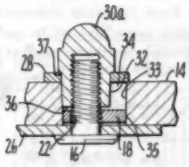
A machine for cutting transverse contraction joints in concrete highways has independently hydraulically controlled saws which may be hydraulically raised or lowered. The saws will always cut to the same depth with respect to the surface of the road and this depth may be controlled. The machine is itself hydraulically driven and has only one gasoline engine and hydraulic storage tank.

3,779,610

WHEEL AND ALIGNMENT ASSEMBLY

Emil J. Pansky, Hillsborough, and Donald G. Dean, Lafayette, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed Jan. 21, 1970, Ser. No. 4,557
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN 3 Claims



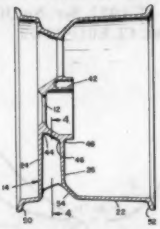
A wheel construction with oversized stud apertures which in cooperation with selected alignment inserts define stud holes coincident in axial alignment with threaded studs on a particular vehicle axle flange. Inserts of differing configuration or of reversible orientation being interchangeably insertable in stud apertures to accommodate the wheel on a plurality of varying axle flanges having threaded studs symmetrically arranged on differing circular radii. Alignment inserts being freely slidable in the stud apertures and retained therein by large flat washers such that lug nuts threadable on the studs and against the washers secure the wheel to the particular vehicle axle flange.

3,779,611

LIGHT WEIGHT RACING WHEEL

Maurice Phillippe, Hethersett, Norfolk, England, assignor to Vel's Ford Sales Co., Torrance, Calif.

Filed Apr. 12, 1972, Ser. No. 243,232
Int. Cl. B60b 9/26, 1/08, 1/12
U.S. Cl. 301—65 6 Claims



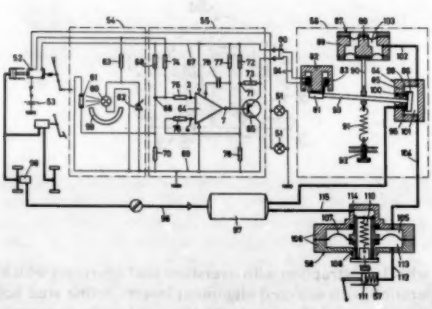
A wheel having spoke members connecting the hub portion with the rim portion that are hollow and connect with the hub portion in a sealing relationship. The opposite ends of each of the hollow spoke members thereby exposing the inside of each of the spokes. A hole is located in one of the spokes near the hub for inflating a tire mounted on the rim portion.

3,779,612

TRAILER BRAKE CONTROL SYSTEM

Hans Tschannen, Gorgier, Switzerland, assignor to Beka St-Aubin S.A., St-Aubin, Neuchatel, Switzerland

Filed May 17, 1971, Ser. No. 143,818
Claims priority, application Switzerland, May 19, 1970, 7394/70; Apr. 23, 1971, 5961/71
Int. Cl. B60t 8/12
U.S. Cl. 303—21 CG 1 Claim



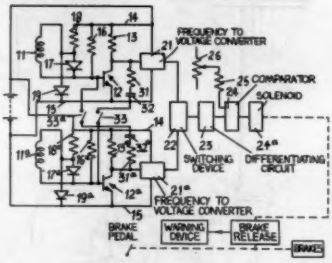
A trailer brake control system for a tractor-trailer arrangement which comprises a deceleration transmitter located at the tractor for generating electrical signals as a function of the braking or deceleration action exerted at the tractor. An electronic circuit serves to amplify the generated electrical signals. Mechanisms responsive to the amplified electrical signals serve to operate braking apparatus arranged at the trailer.

3,779,613

ANTI-SKID BRAKING SYSTEMS

Christopher John Sutton, Tamworth, England, assignor to Girling Limited, Birmingham, England

Filed July 29, 1971, Ser. No. 167,411
Claims priority, application Great Britain, Sept. 9, 1970, 43,114/70
Int. Cl. B60t 8/12
U.S. Cl. 303—21 EB 4 Claims



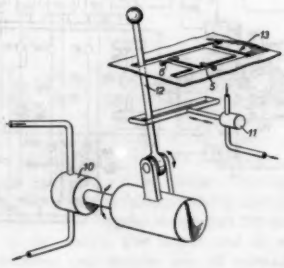
In an anti-skid braking system in which the speeds of two wheels are measured, the two wheels being on a common axle, the signals representing wheel speeds are converted to a suitable form by frequency to voltage converters and then applied to a differentiating circuit which produces a signal representing the rate of deceleration of the slowest wheel, this signal being used to release the brakes from the wheel to prevent skidding. The two frequency to voltage converters are associated with additional transistors and switches in such a way that when the vehicle is to be started, the differentiating circuit receives a signal representing a constant speed even though the vehicle is stationary. When the switch is then opened, the system reacts as if a sudden deceleration has occurred, and releases the brakes. In this way a test is obtained very simply of the operation of the anti-skid circuit.

3,779,614

VEHICLE BRAKING SYSTEMS

Michael James Hughes, Tyseley, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 31, 1972, Ser. No. 240,117
Claims priority, application Great Britain, Apr. 2, 1971, 8,552/71
Int. Cl. B60t 7/08
U.S. Cl. 303—89 3 Claims



A control valve arrangement particularly for use in a vehicle braking system having fluid pressure brake actuator means and fluid pressure controlled lock actuator means, comprises two separate control valves operated by a single control lever,

and a gate which governs movement of the control lever has two parallel legs and two parallel cross-paths intersecting the legs. Mechanical one-way latching means co-ordinate control of the respective valve in such a manner that the lock actuator is rendered operative and inoperative only at predetermined pressure values of the brake actuator means.

3,779,615

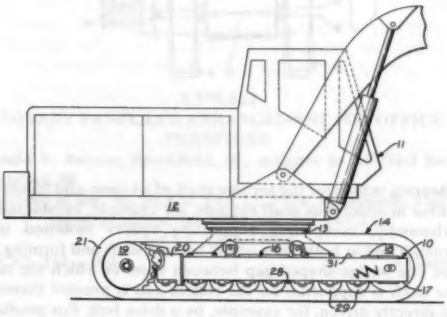
MOUNTING DEVICE FOR ROTATABLE MEMBERS

Robert B. Kennicutt, Morton; Ellis A. Sitton, East Peoria, and John W. Yancey, Aurora, all of Ill., assignors to Catepillar Tractor Company, Peoria, Ill.

Filed Apr. 10, 1972, Ser. No. 242,701

Int. Cl. B62d *55/12, 55/30*

U.S. Cl. 305—31 **9 Claims**



A mounting assembly for slidably supporting a rotatable member comprises a shaft supporting the rotatable member by means of a pair of support brackets being disposed between a pair of substantially parallel frames with each support bracket having a pair of outwardly extending projections slidably embracing a pair of mounting surfaces provided on each frame.

3,779,616

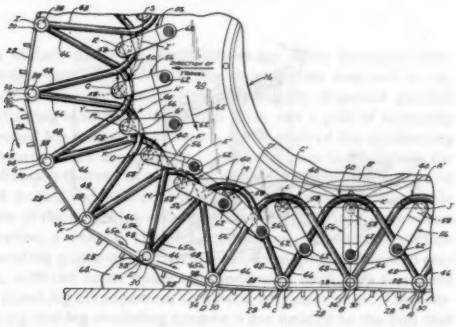
VEHICLE WHEEL

Vernon H. Reisser, 10607 Poppleton Ave., Omaha, Nebr.

Filed Sept. 23, 1971, Ser. No. 183,085

Int. Cl. B62d *55/08*

U.S. Cl. 305—19 **35 Claims**



A wheel for vehicles is comprised of a rigid circular inner wheel which is surrounded by a continuous flexible track having a plurality of pad elements joined together continuously in edge-to-edge relationship by a plurality of hinge means, each of which is interposed between the adjacent edges of the pad elements. A plurality of arcuate members each have a first end pivotally connected to one of the hinge means and a second end pivotally connected to another of the hinge means. The arcuate members span at least two pad members. Each of the hinge means is pivotally connected to at least one of the first ends of the arcuate members so that the arcuate members overlap one another, and a plurality of crank elements are each connected at one of their ends to one of the arcuate members and at the other of their ends to the inner wheel. A lubrication system is also provided for the crank members so as to facilitate lubrication of the pivotal joints at the opposite ends of the crank members.

3,779,617

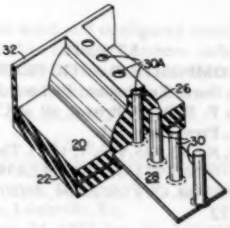
GENERAL PURPOSE TRACKS

Karl V. Palmaer, 5643 Fair Oaks Blvd., Carmichael, Calif.

Division of Ser. No. 817,953, April 21, 1969, abandoned. This application May 28, 1971, Ser. No. 148,152

Int. Cl. B62d *55/24*

U.S. Cl. 305—38 **7 Claims**



A continuous track, for uses such as driving a vehicle over snow, ice, dirt, or the like, has a plurality of cross ridges which extend generally across the full width of the track. These cross ridges are of resilient material, and contain edged or pointed members embedded therein, so that when weight is put on the track, those cross ridges contacting the snow, ice, dirt or the like are compressed, exposing the pointed or edged members to dig into the snow, etc. The track includes at least one continuous band of inextensible material, such as fiberglass. The track may be made up of two or more side-by-side portions which are positioned together to form a complete track.

3,779,618

SELF-CENTERING MAGNETIC SUSPENSION

Luciano Soglia; Aldo Catitti; Ciampino Di Marino, and Giancarlo Sacerdoti, all of Rome, Italy, assignors to Comitato Nazionale per l'Engergia Nucleare, Rome, Italy

Filed Feb. 24, 1972, Ser. No. 228,810

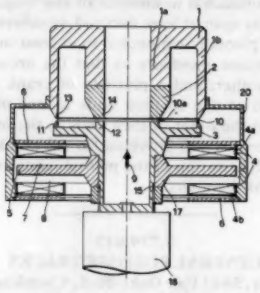
Claims priority, application Italy, Feb. 26, 1971, 48671 A/71

Int. Cl. F16c *39/00*

U.S. Cl. 308—10 **7 Claims**

A device is provided for magnetically suspending a body which rotates about a vertical axis for centering said body radially with respect to said axis and for maintaining it at a constant height which device comprises a magnet which provides the main suspension force, a round armature fastened to the suspended body under said magnet which armature is provided with a peripheral tapered ridge for producing a radial

return force when this armature moves radially with respect to a tapered circular pole piece of said magnet and with a series



of disks each interposed between a pair of coils for producing the vertical balancing force as required for keeping the rotating load at a predetermined level.

3,779,619

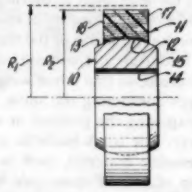
COMPOSITE PLASTIC BEARING

Horace B. Van Dorn, Kensington; Richard J. Matt, Simsbury, and Thomas P. Rolland, Bristol, all of Conn., assignors to Textron Inc., Providence, R.I.

Division of Ser. No. 93,945, Dec. 1, 1970. This application July 14, 1972, Ser. No. 272,039

Int. Cl. F16c *23/04, 33/20*

U.S. Cl. 308—72 **12 Claims**



The invention contemplates an improved sliding bearing, and method of making the same, wherein a low-friction fabric liner of non-cylindrical shape is part of an outer-ring member which has a sliding rotational interface with the matching surface of inner bearing-ring member.

According to the method of the invention, plural inner bearing-ring members are first arrayed upon a common support or mandrel. A braided sock of low-friction fabric is slipped over the inner-ring members and is axially elongated to cause the main body of the sock to conform generally with the external contour of the arrayed inner rings. Hardenable plastic such as epoxy or phenolic is applied to impregnate the threads of the sock and to wet applied reinforcing threads of back-up layers, resulting in a single impregnated cylinder in which the liner material is held to the contour of all inner rings, for curing to ultimate hardness. Separate assembled bearings result from the radial cut-off between adjacent inner rings, and removal of the mandrel. Various further refining details are disclosed.

3,779,620

BEARINGS FOR AN OPEN-END SPINNING TURBINE

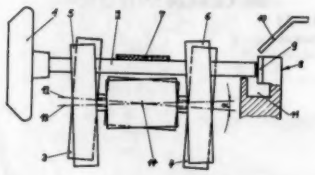
Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Wilhelm GmbH, Reichenbach, Germany

Filed Mar. 16, 1972, Ser. No. 235,319

Claims priority, application Germany, Mar. 17, 1971, P 21 12 913.5

Int. Cl. F16c *13/00*

U.S. Cl. 308—203 **12 Claims**



Bearing means for the turbine shaft of an open-end spinning turbine in which this shaft extends, for example, substantially horizontally, comprising supporting rollers mounted underneath and at both sides of the turbine shaft and forming at least one wedge-shaped gap between them in which the turbine shaft is supported on the rollers and is pressed thereon and directly driven, for example, by a drive belt. For producing an axial thrust of the turbine shaft toward and against a thrust bearing, the shafts of the supporting rollers at both sides of the turbine shaft extend parallel to the turbine shaft as seen in a top view, but as seen in a side view they are inclined about an axis extending transverse to and underneath the turbine shaft.

3,779,621

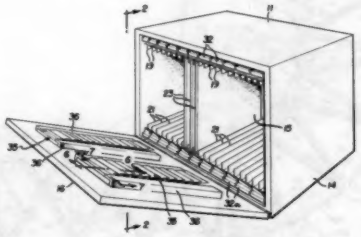
RECORD ALBUM STORAGE CABINET

Ernest Lee Carless, 475 N. Eton Rd., Birmingham, Mich.

Filed July 3, 1972, Ser. No. 268,657

Int. Cl. A47b *81/06*

U.S. Cl. 312—15 **4 Claims**



An open front cabinet having a plurality of upper, narrow tracks vertically aligned with corresponding lower tracks extending from front to rear of the cabinet for storing narrow,

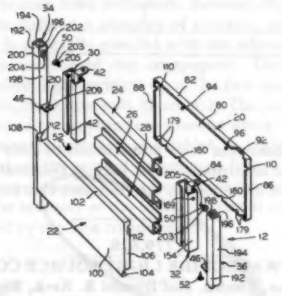
flat, record albums and the like in a vertical plane, with the upper and lower edges of each album slidably fitted within a pair of aligned upper and lower tracks. A pivotable lever is arranged at the rear of each such pair of aligned tracks for pivoting into the space therebetween and engaging the rear vertical edge of an album stored therein and for pushing it forwardly upon pivoting of the lever. Said levers are alternatingly mounted at the lower tracks of one pair and at the upper track of the next adjacent pair of aligned tracks. Each lever is pivotally actuated by a lever push rod which extends from the lever to the open front of the cabinet and terminates in a manual push button for selectively pushing the rod rearwardly and thus pivoting its respective lever forwardly for pushing a pre-selected album forwardly of its tracks. The alternating push rods are located between the upper tracks and the top of the cabinet and between the lower tracks and the bottom of the cabinet, so that each push button may be almost as wide as two adjacent tracks.

3,779,622

UNITARY PANEL LEG ARRANGEMENT FOR OFFICE FURNITURE

Donald V. Beaver, Brookfield, Ill., assignor to All-Steel Inc., Aurora, Ill.

Division of Ser. No. 80,835, Oct. 15, 1970, abandoned. This application Sept. 20, 1972, Ser. No. 290,435
Int. Cl. A47b *17/00*
U.S. Cl. 312—194 **4 Claims**



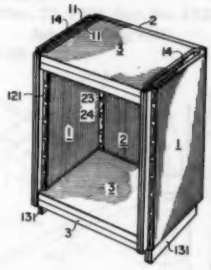
A unitary panel leg arrangement for office furniture comprising a pair of quadrilaterally shaped pans disposed in opposed relation which receive horizontally disposed parallel reinforcing members of channel form and a pair of vertically disposed leg mounting channels at the ends of the reinforcing members which are equipped with weld nuts and brackets for application thereto of screws to secure same to a table top and back panel, and to secure a leg to the respective vertical side edges of the panel leg arrangement. The reinforcing members comprise a central channel member of hat shaped section separating a pair of side members of wing flange channel section, with the latter being equipped with weld nuts to secure the panel leg arrangement to a back of gusset plate. The reinforcing and leg mounting members are welded to the pan that is to face inwardly of the furniture, while the reinforcing members are bonded to the outwardly facing pan by an epoxy resin to insure a flaw free surface for good aesthetic effect without requiring machining.

3,779,623

SECTIONAL RACK

Masatoshi Motohashi, Osaka, Japan, assignor to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 23, 1972, Ser. No. 265,884
Claims priority, application Japan, June 23, 1971, 46/54741
Int. Cl. A47b *43/00, 87/00*
U.S. Cl. 312—257 **7 Claims**



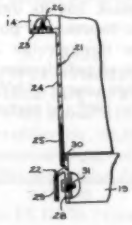
Interfitting, similar sized and configured members, without bolts, screws, nuts or like locking members, define stacked or end to end coupled unit boxes to form a sectional rack useful as a display rack, filing cabinet or bookcase.

3,779,624

CABINET HAVING A KICK PLATE ASSEMBLY

Thomas W. Werderitsch, Grafton, Wis., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 24, 1972, Ser. No. 247,019
Int. Cl. A47b *81/00*
U.S. Cl. 312—278 **13 Claims**



Improved construction for a kick plate assembly in the toe kick area at the lower front of a cabinet such as a compacting appliance. An outwardly movable carrier housed within the cabinet extends substantially close to the bottom of the cabinet such that its lower portion moves outwardly through the toe kick area. The assembly includes a downwardly extending skirt portion mounted at the lower edge of the cabinet's front appearance panel. The skirt portion terminates short of the lower edge of the cabinet, and the lower edge of the cabinet has a strip mounted thereacross adapted to blend with the skirt portion. The skirt portion slightly overhangs the upper edge of the strip whereby the toe kick area beneath the panel is uniformly covered when the panel is in its closed position.

3,779,625
HOLOGRAPHIC RECORDING WITH TWO GROUPS OF DIFFERENTLY ORIENTED PLANE POLARIZED OBJECT ILLUMINATION BEAMS

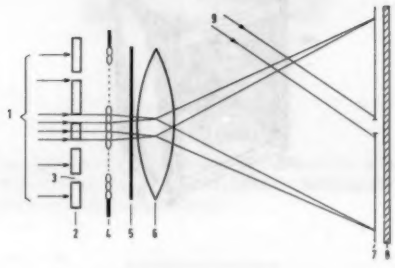
Manfred Lang, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 6, 1972, Ser. No. 232,018

Claims priority, application Germany, Apr. 1, 1971, P 21 16 013.4

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **8 Claims**



The present invention is directed to a method and apparatus for recording information on a holographic storage medium which information is presented in an information mask characterized by projecting a coherent light beam, which has been polarized in one direction, through a mask which changes the direction of polarization of discrete portions of the light beam which is subsequently divided into a plurality of light beams by a mosaic of lens. The plurality of light beams are projected through the information mask, which modulates the beam with information contained in the mask, and onto the holographic storage medium where a reference beam is superimposed therewith to record the information. The polarization mask is provided with statistically distributed raster of apertures so that a portion of the light beam passing through the material of the mask has its direction of polarization rotated relative to the direction of polarization of the other portion which passes through the apertures. The angle between the directions of polarization of the two portion of the light beam is in either a range of 80° to 100° and preferably 90° or a range of 170° to 190° and preferably 180°.

3,779,626
ASTRONOMICAL TELESCOPE

Heinz Korrenn, Schweinfurt; Horst Voll, Obertheres, and Harald Grubel, Schweinfurt, all of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

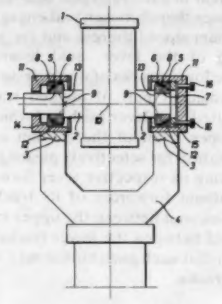
Filed Oct. 25, 1972, Ser. No. 300,860

Claims priority, application Germany, Oct. 29, 1971, P 21 54 087.4

Int. Cl. G02b *23/16*

U.S. Cl. 350—85 **3 Claims**

An astronomical telescope is disclosed having a tube mounted to pivot about a declination axis, the tube being held free of play by means of two laterally projecting trunnions, coaxial with the declination axis, disposed in the two limbs of a fork, in bearings which are axially pre-loaded away from each other, and in which each trunnion is rotatably mounted in an associated limb of the fork by means of an enclosed fluid-tight hydrostatic self-aligning bearing, with spherically curved mutually facing bearing surfaces of which the common center of curvature lies on the declination axis, the two bearings being



axially mutually pre-loaded apart by virtue of the elasticity of the fork. At least one of the bearings is axially adjustable in the associated limb of the fork along the declination axis.

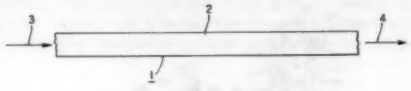
3,779,627
OPTICAL TRANSMISSION LINE ELEMENTS UTILIZING FLUORINATED POLYMERS

Douglas Arthur Pinnow, Berkeley Heights, and LeGrand Gerard Van Uitert, Morris, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 17, 1971, Ser. No. 143,876

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **9 Claims**



Optical transmission lines constructed of fully fluorinated polymers in the amorphous state, such as fluorinated ethylene propylene, have low inherent insertion loss characteristics.

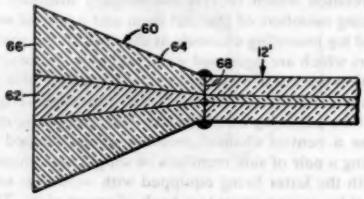
3,779,628
OPTICAL WAVEGUIDE LIGHT SOURCE COUPLER

Felix P. Kapron, Elmira, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,702

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **3 Claims**



A light coupler for efficiently utilizing light from a source of optical wave energy in the initiation of light mode propagation

in an optical waveguide. The coupler comprises a tapered core of transparent material and a layer of transparent cladding material disposed upon the surface of the tapered core. The refractive index of the core is greater than that of the cladding layer. The core has a large diameter end terminating in an optically polished surface which is adapted to receive light from the light source. The small diameter end of the core is substantially aligned with the core of the optical waveguide.

3,779,629

COMBINED LENS AND REFLECTOR FOR A VEHICLE LAMP

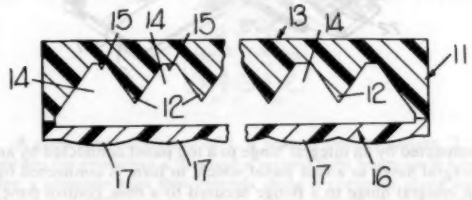
Stanley Green, Warley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 5, 1972, Ser. No. 259,820

Claims priority, application Great Britain, June 23, 1971, 29,403/71

Int. Cl. G02b *5/12*

U.S. Cl. 350—103 **7 Claims**



A combined lens and reflex reflector for a vehicle lamp in particular a vehicle tail lamp. The combination includes a first transparent component having integral with one face thereof a plurality of corner cube reflectors. Between the corner cube reflectors are defined a plurality of recesses, and the base of each recess is generally parallel with the adjacent portion of the opposite surface of the component. The corner cube reflectors reflect light incident upon the first component from one direction, back towards its source. The combination includes a second transparent component which defines a plurality of converging lenses, and which is positioned so that light incident on the second component from a direction opposite said one direction is directed by the lenses onto the base regions of the recesses of the first component so that the light is transmitted by the first component.

3,779,630

REAR PROJECTION SCREEN AND METHOD OF MAKING SAME

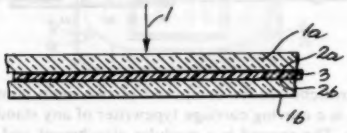
Erik Clausen, and Johannes Clausen, both of Farevejle, Denmark

Filed June 14, 1972, Ser. No. 262,671

Claims priority, application Denmark, Dec. 16, 1971, 6158/71

Int. Cl. G03b *21/56*

U.S. Cl. 350—117 **8 Claims**



A screen for rear projection comprising an intermediate sheet consisting of light conducting partly crystallized plastic material to opposite sides of which a cover sheet is adhered, light diffusing layers being arranged at the interfaces between the intermediate sheet and the cover sheets the latter having smooth outer surfaces.

3,779,631

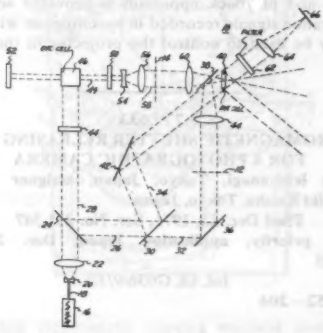
OPTICAL CORRELATOR HAVING A DYE AMPLIFIER FOR AMPLIFYING CORRELATING PORTIONS OF SIGNALS

David M. Shupe, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 27, 1971, Ser. No. 212,459

Int. Cl. G06g *9/00*

U.S. Cl. 350—162 SF **8 Claims**



An optical correlator in which a Fourier transform signal representing one image, and a Fourier transform holographic interference signal representing another image are projected onto an organic dye cell amplifier. The dye cell amplifier records, or in other words absorbs energy from the holographic interference signal and utilizes the absorbed energy to differentially amplify the Fourier transform signal. The amount of amplification provided to the various portions of the Fourier transform signal is proportional to the degree of correlation between the various portions of the two images.

3,779,632

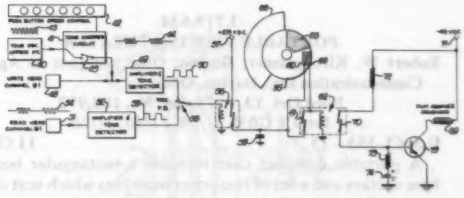
ADJUSTABLE SPEED PROJECTOR WITH SYNCHRONIZED SOUND RECORDER

Guy C. Caraway, 9703 Wiley Burke Ave., Downey, Calif.

Continuation-in-part of Ser. No. 89,861, Nov. 16, 1970, abandoned, and a continuation-in-part of Ser. No. 91,061, Nov. 19, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,470

Int. Cl. G03b *31/04*

U.S. Cl. 352—17 **30 Claims**



An adjustable speed projector including a continuously running shutter for repetitively interrupting the projection

light path at a rate which is independent of the film frame rate, a source of film frame advance signals having a repetition rate controllable by an operator, and means for advancing a film by one frame in response to each advance signal at a time corresponding to the next succeeding interruption of the projection light path by the shutter so that the film is in motion only at times when the shutter interrupts the light path. The film-advancing mechanism includes a continuously rotating drive wheel, a driven wheel which is caused to engage the drive wheel for one cycle in response to each actuating signal, and a claw, one end of which is eccentrically mounted on the driven wheel and the other end of which engages a film sprocket hole to advance the film by one frame for each cycle of the driven wheel. A single spring urges the driven wheel into engagement with the drive wheel and also urges the claw into engagement with the film and against a lateral guide surface. Two-channel recording and playback apparatus is provided so that film frame advance signals recorded in synchronism with a sound track may be used to control the projector in the playback mode.

3,779,633

ELECTROMAGNETIC SHUTTER RELEASING DEVICE FOR A PHOTOGRAPHIC CAMERA

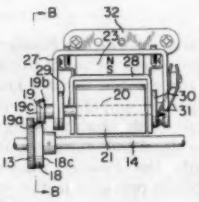
Toshikazu Ichiyanagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,347

Claims priority, application Japan, Dec. 28, 1970, 45/128435

Int. Cl. G03b *9/10*

U.S. Cl. 352—204 **9 Claims**



An electromagnetic shutter releasing device which includes an electromagnet controlled by an electrical input pulse for electromagnetically releasing a movable shutter from its stationary position for exposure, a permanent magnet interacting with said electromagnet, the polarity of said electrical input to the electromagnet being changed to interact with the permanent magnet to stop or start a motor for driving the shutter shaft. For continuous shooting, the motor is kept driven without applying the electrical input to the electromagnet. The shutter releasing device further incorporates an electronic control circuit including a multivibrator which can respond quickly and correctly to the electrical input pulses.

3,779,634

PORTABLE VIEWING THEATER

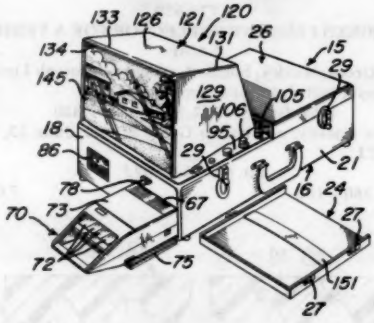
Robert W. Kirchgessner, Dayton, Ohio, assignor to Applied Communication Inc., Dayton, Ohio

Filed Oct. 13, 1971, Ser. No. 188,972

Int. Cl. G03b *31/06, 21/30, 21/10*

U.S. Cl. 353—17 **11 Claims**

A portable compact case includes a rectangular box-like base section and a set of two cover members which seat on the base section and define corresponding front and rear compartments. A standard carousel-type film slide projector is positioned within the rear compartment, and a collapsible viewing hood assembly is located within the front compartment. The front compartment also encloses a standard cassette-type tape recorder in addition to an electronic synchronizing unit which controls the advancement of the slide projector in response to inaudible signals on the tape cassette. The recorder is removable from the front compartment through a door opening within the front wall of the case, and a speaker is positioned adjacent the front wall in back of an adjustable mirror. The viewing hood is formed from a substantially rigid sheet of plastics material and includes a set of side panels which are



connected by an integral hinge to a top panel connected by an integral hinge to a rear panel which, in turn, is connected by an integral hinge to a flange secured to a base control panel mounted within the front compartment of the case. The hood assembly also includes a second mirror and a rear projection viewing screen which is removable for projecting onto a remote viewing screen. The rear projection screen is normally stored within the cover member for the front compartment.

3,779,635

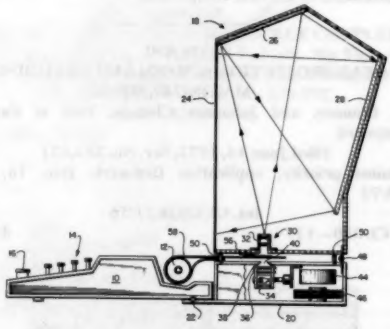
MICROFICHE READING ATTACHMENT FOR A TYPEWRITER

George J. Yevick, Leonia, N.J., and Adnan Waly, Stamford Conn., assignors to Personal Communication, Inc., Stamford, Conn.

Filed Apr. 5, 1971, Ser. No. 131,050

Int. Cl. G03b *21/11, 23/08, 21/134*

U.S. Cl. 353—27 **2 Claims**



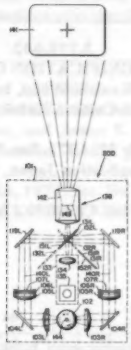
A microfiche reader composed of two main components. The first is a moving carriage typewriter of any standard construction. The second is a modular attachment and contains optical projection and viewing elements. The microfiche is read by unit index rotation of the typewriter platen (row scanning) and unit index actuation of the typewriter spacer bar (column scanning).

3,779,636

SLIDE PROJECTOR

Dean McCormack Peterson, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 14, 1970, Ser. No. 63,741
Int. Cl. G03b 23/16
U.S. Cl. 353—83 5 Claims



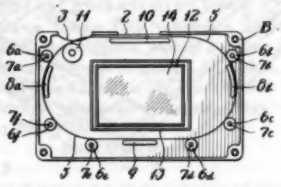
A projector comprised of 1. a unitary optical system, 2. a means for providing a first and a second light beam each having a separate axes that extends along a common plane and through a different one of two optical objects, 3. a movable first and second light beam directing mirrors jointly coacting simultaneously to replace by infusion a projected image of one of said optical objects that is being projected onto a show screen with the projected image of the other optical object, 4. a connection between the means that moves the light beam directing means and a preview unit of the projector to move the axis of a lens of this preview unit a distance equal to the thickness of one of the mirrors to enable a light image of the non projected one of the two optical objects to be precisely directed by the light beam directing means onto a screen of the preview unit and 5. the employment of the movement of the light beam directing means to replace by infusion the projected image of optical objects that are to be projected onto the preview screen.

3,779,637

SLIDE ATTACHMENT WITH A SOUNDING MECHANISM

Minoru Otsuboj, 11-21, 1-chome, Nakacho, Meguro-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 45,391, April 11, 1970, abandoned. This application Mar. 7, 1972, Ser. No. 232,469
Claims priority, application Japan, June 14, 1969, 44/46500
Int. Cl. G03b 31/06
U.S. Cl. 353—120 6 Claims



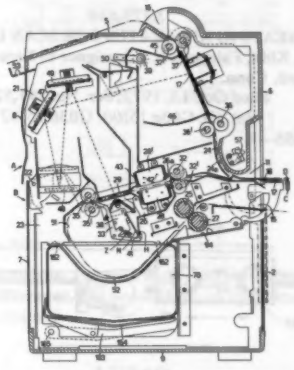
A slide attachment with a sound mechanism which includes a photographic slide film secured within an opening of a casing and an endless strip of film on which sound is recorded in a helical groove with the endless strip being mounted for sliding movement within the casing circumferentially about the opening.

3,779,638

DESK-TOP ELECTROSTATIC COPYING MACHINE

Giovanni Ravera, Turin; Nicola Cosmo, Ivrea, Turin, and Giorgio Siletto, Turin, all of Italy, assignors to Ing. C. Olivetti & C. S.p.A., Torino, Italy

Filed Sept. 23, 1970, Ser. No. 74,817
Claims priority, application Italy, Sept. 24, 1969, 53451 A/69
Int. Cl. G03g 15/00
U.S. Cl. 355—3 7 Claims



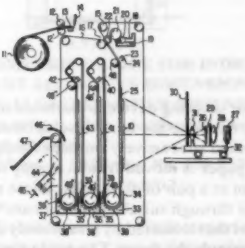
A desk-top electrostatic copying machine comprising a lower section, an upper section pivotally attached to the lower section, and a front section pivotally attached to the upper section. The lower section contains a copy paper charging station, a copy paper exposure station, and a copy paper developing station, all disposed along a copy paper flow path. The copy paper flow path is defined by bottom elements carried by the lower section and top elements carried by the upper section, so that when the upper section is opened the flow path of the copy paper is exposed. The upper section contains an original paper illuminating station and an optical system for projecting the image of the original paper from the illuminating station to the copy paper exposure station. An original paper flow path is defined by bottom elements carried by the upper section and top elements carried by the front section so that when the front section is pivoted to the open position the flow path of the original paper is exposed.

3,779,639

COLOR ELECTROPHOTOGRAPHIC APPARATUS

Yasuo Tamai, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami, Ashigara-shi, Kanagawa, Japan

Filed Dec. 30, 1971, Ser. No. 214,242
Claims priority, application Japan, Dec. 30, 1970, 45/123031
Int. Cl. G03g 15/04
U.S. Cl. 355—4 10 Claims



Color electrophotographic apparatus comprises a plurality of operation stations each of which has a charging section, an

optical image exposure section and a developing section. Two sets of endless belts travel between the plurality of operation stations and convey a flexible electrophotographic material. The endless belts contact only the end or edge portions of the electrophotographic material. An optical system is provided wherein the optical axis for exposing the electrophotographic material is maintained in the same position in all the optical image exposure sections, the surface of the photoconductive insulating layer is perpendicular to the optical axis, and the optical images formed on the insulating layer are equal to each other in size during all exposures.

3,779,640

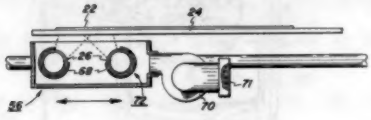
HEATING APPARATUS FOR SCAN LAMP

Wayne L. Kidd, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 13, 1972, Ser. No. 297,520

Int. Cl. G03g *15/00*; **G03b** *15/02*

U.S. Cl. 355—8 **14 Claims**



An illuminating apparatus in which the temperature thereof is regulated for producing light rays having a substantially constant spectral energy distribution.

3,779,641

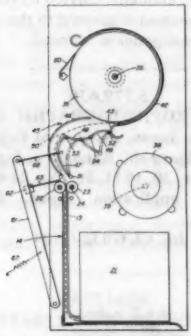
SELF-ACTIVATING CUTTER FOR STRIP MATERIAL

Frederic D. Hauck, Avon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,953

Int. Cl. G03b *29/00*

U.S. Cl. 355—29 **16 Claims**



A cutting or severing device is disclosed in conjunction with a processing machine for heat development of latent images that are exposed successively on paper supplied in roll form. The strip of paper is moved from a supply roll through an exposure station to a pair of drive rolls. These rolls also move the strip of paper through suitable guide means to the surface of a rotating drum that is heated by a resiliently mounted shell that partially surrounds the drum. The guide means through which the strip of paper is moved to engage the drum comprises a fixed member on one side of the strip and a number of sections on the other side of the strip that are pivotally interconnected so as to be movable to a collapsed position when the length of the strip of paper between the drive rolls and drum is shortened to a prescribed amount. A cutting blade is coupled to one of the movable sections of the guide means and upon movement into the collapsed position, the blade is moved toward and into engagement with the strip of paper at a point between the drive rolls and the end of the guide means adjacent thereto.

3,779,642

VARIABLE MAGNIFICATION COPIER MACHINE

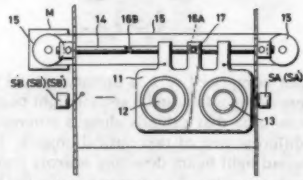
Masaya Ogawa, and Kenichi Wada, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Filed July 17, 1972, Ser. No. 272,709

Claims priority, application Japan, Aug. 9, 1971, 46/71071 (utility model)

Int. Cl. G03b *27/32*

U.S. Cl. 355—55 **3 Claims**



Device for varying the copying magnification by moving the position of the supporter member mounted with two or more lenses and adapted to be automatically returned to the position for the usual magnification when the main switch for the copier machine is turned off.

3,779,643

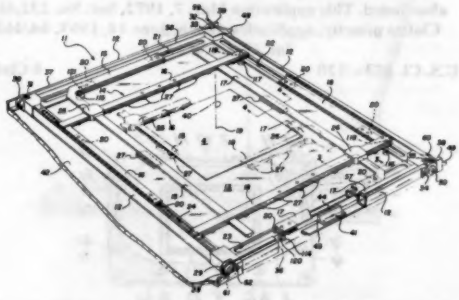
EASEL LOCKING DEVICE

Louis C. Nosco, Webster, and James E. Ryan, Avon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1972, Ser. No. 300,921

Int. Cl. G03b *27/62*

U.S. Cl. 355—75 **3 Claims**



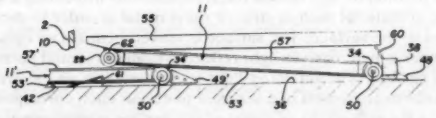
A photographic copying apparatus is provided with a document holder for carrying different size documents which are to be copied. The document holder is supported on the copying apparatus for movement between a document copying position and a document loading and unloading position. An easel

mechanism, mounted on the document holder, includes a plurality of easel members which cooperate to frame an area occupied by a document. At least one of the easel members is movable to vary the size of such area for accommodating different size documents. An easel locking device restrains at least one of the easel members from movement to vary the size of the area framed thereby, in response to movement of the document holder out of the document loading and unloading position, and releases at least one of the easel members for movement to vary the size of such area, in response to movement of the document holder into the document loading and unloading position.

3,779,644
DOCUMENT HOLDER EXCHANGE APPARATUS

Louis C. Nosco, Webster, and James E. Ryan, Avon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1972, Ser. No. 300,922
Int. Cl. G03b *27/62*
U.S. Cl. 355—75 **4 Claims**



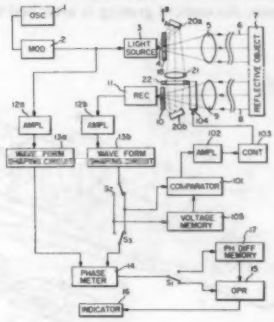
A photographic copying apparatus is provided with several document holders for individually carrying separate documents which are to be copied. Use of the copying apparatus involves having a first one of the document holders in a document copying position while a second one of the document holders is in a document loading and unloading position. Each document holder includes a wedge member on a forward portion thereof, which may be slipped beneath a rearward portion of another document holder so as to raise that holder. To interchange the respective positions of the first and second document holders, the second document holder is moved in a forward direction out of the document loading and unloading position, causing a wedge member thereof to slip beneath a rearward portion of the first document holder and to raise that holder out of the document copying position. In this way, the first document holder will be located on top of the second document holder as that holder is moved into the document copying position. Thereafter, the first document holder is moved in a rearward direction into the document loading and unloading position.

3,779,645
DISTANCE MEASURING DEVICE

Narihiko Nakazawa, Tokyo; Taiji Nakamura, Zushi; Teruyoshi Kitahara, and Yoshio Habuka, both of Hayama-machi, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed May 13, 1971, Ser. No. 143,048
Claims priority, application Japan, May 20, 1970, 45/43052; May 20, 1970, 45/43055
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **8 Claims**

An improved distance measuring device of the type which utilizes an amplitude-modulated light wave to measure the phase difference between the transmitted and the received modulated wave and thereby determine the distance of an object, the device being characterized by a feedback path combined with the optical system of the device so that the difference in magnitude between a reception signal and a standard signal or a reference signal may be zero or within a predetermined range, whereby the phase difference between the two signals can be measured independently of the non-

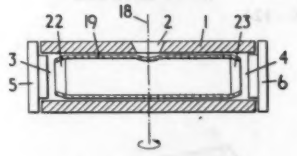


linearity of the circuits and thus highly accurate measurement of the phase difference and accordingly of the distance of the object can be attained.

3,779,646
PREPARATION OF PIG IRON SAMPLES FOR SPECTRAL ANALYSIS

Jules Hancart, Bressoux, and Ivan Houbart, Chenee, both of Belgium, assignors to Centre National de Recherches Metallurgigues Centrum voor research in de Metallurgie, Brussels, Belgium

Continuation-in-part of Ser. No. 876,959, Nov. 14, 1969, abandoned. This application June 7, 1972, Ser. No. 260,593
Claims priority, application Luxembourg, Nov. 15, 1968, 57328
Int. Cl. G01j *3/00*; G01n *1/00*
U.S. Cl. 356—74 **1 Claim**



A portion of liquid pig iron tapped directly from the furnace is centrifuged until solidification is completed. The centrifuge is lined with refractory material to prevent solidification of the metal while flowing. The sample produced has an approximately homogeneous structure and is subjected to spectral analysis.

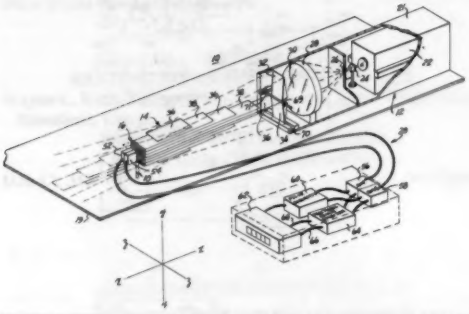
3,779,647
INTERFEROMETRIC DEVICE FOR INDICATING DISPLACEMENT ALONG ONE DIMENSION DURING MOTION ALONG ANOTHER DIMENSION

Juan C. Dawson, Littleton, Colo., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 7, 1971, Ser. No. 178,237
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 **2 Claims**

An apparatus for measuring the displacement of a part such as a work performing tool or a measuring probe of a flatness measuring instrument. The apparatus includes means for

providing a collimated laser beam that is disposed parallel to and displaced slightly from a predetermined plane of motion. Two identical prisms are placed side by side to intercept different portions of the laser beam. These prisms direct the intercepted portions of the laser beam to intersect and provide an interference pattern comprising a series of adjacent interference planes. An optical grating is attached to a part that is



to be moved nominally along the predetermined plane of motion. This grating intercepts the interference planes and provides a Moire fringe output signal that varies in response to any displacement of the part perpendicular to the plane of motion. Electronic apparatus detects and measures this Moire fringe pattern variation and provides an output indicating the magnitude and direction of any perpendicular displacement.

3,779,648

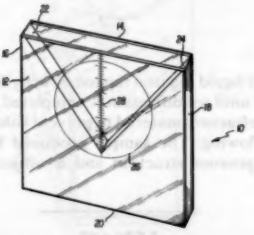
HYDROPHILIC LENS HOLDER

Maurice G. Poster, 108 Columbia Dr., Jericho, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,838

Int. Cl. G01b 9/00

U.S. Cl. 356—124 **2 Claims**



A lens holder including a "V" or "U" shaped support member mounted between two transparent plates, said support being so sized as to be capable of supporting without deformation a hydrophilic contact lens and forming, with the transparent plates, a container for saline solution. In use, the hydrophilic lens is placed on the support and hydrated in an appropriate solution where the measurements with conventional equipment may be conducted.

3,779,649

METHOD OF AND AN ELECTRO-OPTICAL SYSTEM FOR INSPECTING MATERIAL

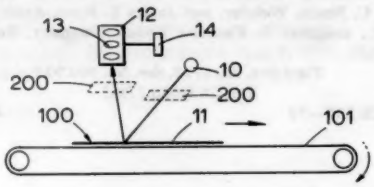
Hastings Charles Maxim Bertoya; Donald Mackenzie Ross; Richard Anthony Brook; Anthony John Allnutt, and Robert Ernest Semos, all of Kent, England, assignors to Sira Institute, Kent, England

Continuation-in-part of Ser. No. 3,231, Jan. 15, 1970, abandoned. This application Dec. 10, 1971, Ser. No. 206,611

Claims priority, application Great Britain, Jan. 17, 1969, 2,862/69

Int. Cl. G01n 21/16, 21/22

U.S. Cl. 356—200 **20 Claims**



A method of, and system for, automatically inspecting a surface of material such as strip or sheet metal in order to detect flaws in the surface. The surface is moved beneath an optical scanner which receives light reflected from sequential parts of said surface. The reflected light is converted in an electrical waveform composed of a series of pedestals each corresponding to the reflectivity of a part of the surface representing one scan. An analogue comparison waveform is derived from each of the pedestals, by inter alia a special filtering operation and this waveform provides a reference by which the pedestals are examined for flaw indicative information. Various techniques are employed to assess the quality of the pedestals and to generally improve the validity of the flaw detecting operation.

3,779,650

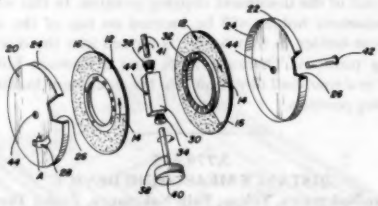
PORTABLE SMOKE MEASURING DEVICE

John H. Crowley, 5607 Alburg Ave., Racine, Wis.

Filed June 25, 1971, Ser. No. 156,612

Int. Cl. G01n 21/20

U.S. Cl. 356—207 **5 Claims**



A portable device for visual measurement of smoke density of opacity that includes first and second discs that are support in overlapping relation for rotation relative to each other. Each disc has means effecting the opacity of light passing therethrough with the two means cooperating to vary the opacity of the selected area of the disc in response to angular rotation of the discs relative to each other. The device has indicating means giving an indication of the degree of opacity of the selected area so that the selected area may be located in juxtaposed relation to a stream of smoke emanating from a stack and the discs can be rotated relative to each other until the opacity of the selected area corresponds to the opacity of

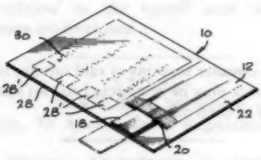
the smoke. In one embodiment, the discs are of the exposed photosensitive plate type and have a peripheral area of progressively increasing opacity that are placed in overlapping relation to vary the opacity of the two discs while in the alternate embodiment the discs are polarized so that relative rotation will decrease the amount of light passing therethrough.

3,779,651

LIGHT GAUGE FOR IDENTIFYING PLANTS THAT CAN GROW IN A PARTICULAR LOCATION

Theodore Gunlock, 1450 W. 228th St., Torrance, Calif.

Filed Nov. 20, 1972, Ser. No. 308,055
Int. Cl. G01j *1/00, 1/46*
U.S. Cl. 356—213 **10 Claims**



One or more strips of light-sensitive material covered by a filter are mounted on a support. A plurality of colors are printed on the support corresponding to the color changes experienced by the light-sensitive material when various quantities of radiation fall on it. A legend is associated with each printed color identifying to plants that can grow in a particular location where the light falling on the light-sensitive material in that location over a predetermined period, causes a color change in the light-sensitive material corresponding to that printed color.

3,779,652

AUTOMATIC PENCIL FOR DRAWING A LINE

Sadayoshi Kunitoku, Oshima Arao, Japan, assignor to Nishitetsu Sangyo Co., Ltd., Fukuoka, Japan

Filed Aug. 5, 1971, Ser. No. 169,369
Claims priority, application Japan, Aug. 8, 1970, 45/69553
Int. Cl. B43k *29/00*
U.S. Cl. 401—50 **4 Claims**

An automatic pencil comprises a motor for constantly rotating the lead therein so that its point is automatically sharpened by contact with a writing surface.

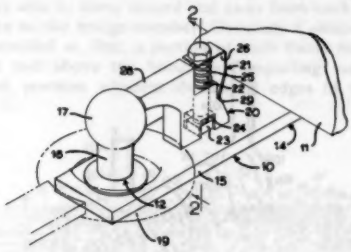
3,779,653

TRAILER HITCH

William D. Charlton, 614 Second St., Cheney, Wash.

Filed Nov. 8, 1971, Ser. No. 196,521
Int. Cl. F16c *1/06*
U.S. Cl. 403—3 **1 Claim**

A trailer hitch for a towing vehicle, providing the capability for towing trailing vehicles having either ball and socket or ring and pintle hitching arrangements. The hitch includes a base which supports an upright pintle and a movable ring retaining bracket. When a ring and pintle hitching arrangement is required, the towing ring on a trailing vehicle is placed over the pintle. The retaining bracket is then moved and locked into an operative position preventing the ring from becoming disengaged while in tow. When a ball and socket hitching arrangement is required, the retaining bracket is



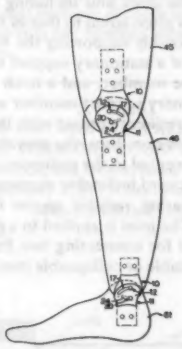
pivoted and locked into an inoperative position. The socket of a trailing vehicle may then be moved into engagement with a ball formed at the upper end of the pintle.

3,779,654

ARTIFICIAL JOINT

Robert V. Horne, 2514 W. Kennwick Ave., Walla Walla, Wash.

Filed Aug. 6, 1971, Ser. No. 169,735
Int. Cl. F16c *11/00;* **A61f** *1/04, 5/00*
U.S. Cl. 403—62 **4 Claims**



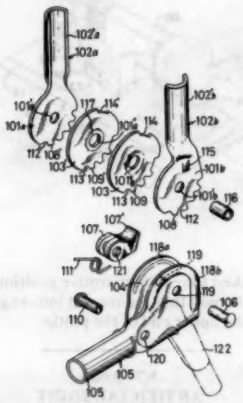
An artificial joint for simulating motion of a natural slide and hinge joint of the body, such as those at the knee, elbow or ankle. The disclosed joint comprises rigid overlapping plates connected by a pivot and slide arrangement. First and second pivot bearing elements engage first and second arcuate bearing surfaces on the respective plates to interconnect the plates for controlled sliding and pivoting action relative to one another. One bearing surface has a configuration approximating the convex extremity of one member in the simulated joint. The remaining bearing surface controls the spacing of the two pivot axes to introduce proper forward or rearward displacement thereof in simulating joint movement. The joint may be utilized as a lateral brace for a natural joint, or may be utilized as a lateral brace for a natural joint, or may be modified to serve as an articulating joint in an artificial limb.

3,779,655

ANGLE VARIABLE JOINT FOR FOLDABLE CHAIR

Yoshitane Toyota, Osaka, Japan, assignor to Sanshin Kinzoku Industries Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,285
Int. Cl. F16c *1/00*
U.S. Cl. 403—93 **2 Claims**



A joint comprising a movable rod to be attached to a backrest frame member and having at its lower end a pair of flat discs spaced apart in facing relation to each other and including outer peripheral gear portions respectively, free cam discs of approximately the same size as the flat discs disposed in the space between the flat discs and including outer peripheral gear portions having a pitch equal to that of the gear portions, a pin member for pivotably supporting the flat discs and cam discs at the junction of a stationary support member to be attached to a seat frame member, and a latch member accommodated in the stationary support member and having a support pawl urged into resilient contact with the outer peripheries of the flat discs and cam discs, the movable rod being thus supported by and connected to the stationary support member in a forward and backward inclinable manner at progressively decreasing and increasing variable angles for changing the angle of inclination. The joint is applied to a resting sofa, deck chair or camping bed for connecting two frame members at their junction in a foldable or collapsable manner.

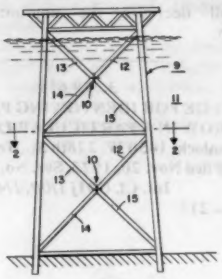
3,779,656

TUBULAR JOINT

Arthur L. Guy, and William J. Ruez, III, both of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed June 30, 1971, Ser. No. 158,305
Int. Cl. F16b *7/00*
U.S. Cl. 403—174 **12 Claims**

A tubular joint for framing structures, such as offshore platforms of the type used by the oil industry, in which tubular X joints are used within the structural and geometric bracing of the structures. Tubular (or cylindrical) framing members are joined together in an intersecting X shape. Wedge shaped segments of a tubular member are connected to each other and each segment is also connected to a tubular framing member and arranged so that the segments carry the axial loads of said tubular framing members in a straight line direct stress pattern



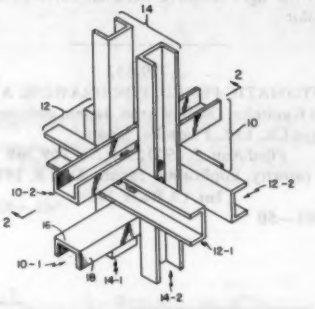
across the open circular sections of said tubular framing members. The segments may be connected to two flat intersecting plates instead of to each other.

3,779,657

STRUCTURAL JOINT

John M. Kostick, Roxbury, Mass., assignor to Omniversal Design, Roxbury, Mass.

Filed Apr. 21, 1971, Ser. No. 135,839
Int. Cl. F16b *7/18*
U.S. Cl. 403—217 **7 Claims**



A structural joint comprising three pairs of beams, the beams of each pair being spaced from and parallel to one another, the beams of any pair lying exterior to the beams of a second included pair and lying interior to the beams of a third pair, the included widths of the beams of a pair being equal. The three pairs of beams together define an intersection void; a tension member passes through the intersection void and joins the two beams of a pair and biases them together against the included second pair. The tension members extending between the beams of each pair are aligned in a different plane in relationship to those of the other pairs.

3,779,658

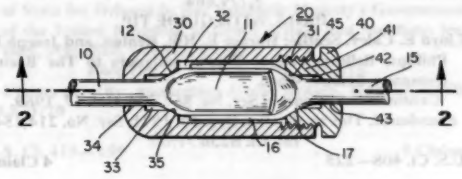
COUPLING MEANS FOR SEWER ROD

Charles B. Caperton, 52 Pitney Ave, Springlake, N.J.

Filed June 6, 1972, Ser. No. 260,142
Int. Cl. F16b *7/18*
U.S. Cl. 403—393 **5 Claims**

Coupling means connects short individual sections of steel rod into a long continuous length of rod, for clearing obstruc-

tions in underground pipe, sewers and other conduits, and provides transmission of applied axial and torque forces from one rod to the next without slippage therebetween and



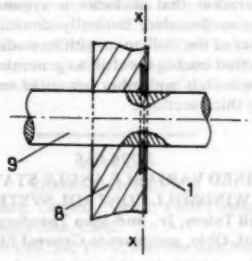
without loss of power. The ends of the rods are shaped symmetrically relative to the center axis. Several different coupling means are disclosed.

3,779,659

FASTENING MEMBER

Roger Habert, 73 Avenue de la Republique, Epinay/Seine, France

Filed Nov. 11, 1971, Ser. No. 197,670
Claims priority, application France, Nov. 17, 1970, 7041155
Int. Cl. F16d *11/06*
U.S. Cl. 403—372 **2 Claims**



This invention relates to a fastening member for securing an element on a shaft. The fastening member is to be placed without radial play between the external cylindrical surface of the shaft and an interior cylindrical surface of a groove coaxial with the shaft and formed in the element. The fastening member comprises anchoring means preferably in the form of teeth defined by forming a plurality of recesses on the inner and outer peripheral surfaces of a frusto-conical metallic annulus. The anchoring means are capable of acting in a radial direction so as in use to secure the element both against rotation and against movement in an axial direction relative to the shaft.

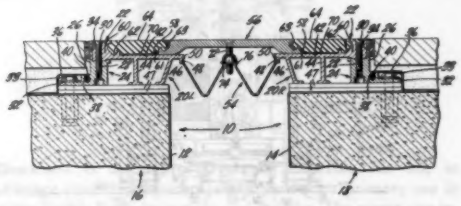
3,779,660

EXPANSION JOINT SEAL

Frank L. McGeary, Scotch Plains, and Patrick L. Zampetti, Cranford, both of N.J., assignors to Construction Specialties, Inc., Cranford, N.J.

Filed Dec. 29, 1971, Ser. No. 213,684
Int. Cl. E01c *11/04*
U.S. Cl. 404—69 **6 Claims**

An expansion joint seal for bridging and sealing an expansion space between structural members comprises a pair of elongated frame members, each of which is adapted to be secured rigidly to one of the structural members on either side of the joint, an elongated substantially rigid bridge member extending lengthwise of the joint and spanning the expansion space between the structural members, the lateral edges of the bridge member being spaced from the edges of the frame members, and a seal member of elastomeric material received between the bridge member and the edges of the respective frame members. The frame members and bridge member include companion surfaces disposed in substantially horizontal planes so that the frame members support the bridge member but are able to move toward and away from each other and relative to the bridge member. Generally C-shaped cavities are provided at, first, a portion of each frame member adjacent and above the horizontal supporting surface and, second, portions adjacent the lateral edges of the bridge



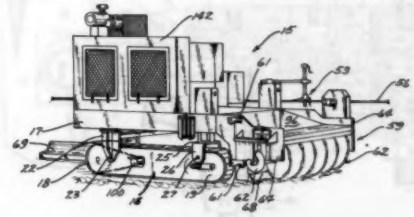
member, the respective cavities of the frame members and bridge member facing each other across the space above the horizontal surfaces of the frame members. The elastomeric material extends into and is therefore captured and sealed within the C-shaped cavity on each frame member and on the bridge member. The inherent resiliency of the elastomeric material tends to hold the bridge member centered between the frame members and distends in accordance with relative movements of the frame members. A bond breaker medium is provided between the seal members and all underlying substantially horizontal surfaces of the frame member and bridge member and prevents any bonding between the seal members and such surfaces.

3,779,661

MACHINE AND METHOD FOR PREPARING A SURFACE AND FOR SLIP FORMING A CONCRETE STRUCTURE

Harold W. Godbersen, Ida Grove, Iowa

Filed May 3, 1971, Ser. No. 139,665
Int. Cl. E01c *19/50*
U.S. Cl. 404—72 **6 Claims**



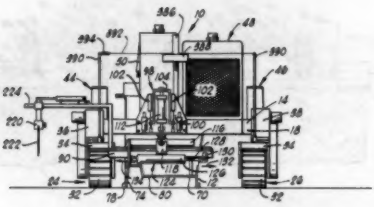
The machine and method provide for the simultaneous and continuous preparing of a graded surface and the slip forming of a curb and gutter or a sidewalk on the prepared surface. An adjustable frame that is carried over the prepared surface is movably adjusted to positions, in conformance with the grade characteristics of a grade line that is extended along one side of the machine, by means actuated by a grade sensor unit

operatively associated with the grade line. The surface traveled by the machine is prepared by a grade trimmer carried at the front end of the adjustable frame and a slip form or mule is extended longitudinally of and supported from the adjustable frame at a position rearwardly of the grade trimmer.

3,779,662
CURB SLIP FORM APPARATUS

Don W. Smith, Edmond, Okla., assignor to CMI Corporation, Oklahoma City, Okla.

Filed July 12, 1971, Ser. No. 161,628
Int. Cl. E01c *11/28*
U.S. Cl. 404—98 **28 Claims**

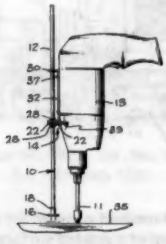


An improved curb slip form apparatus for forming a predetermined, formed configuration of a concrete material or the like on a surface generally along a predetermined survey line, having a form member which is pivotally connected to a support frame, the formed configuration being extruded from the form member, in an operating position of the form member and in a driven position of the support frame. The curb slip form apparatus includes, a form steering assembly which is connected to the form member and constructed to sense the position of the form member relative to a predetermined control line to automatically maintain the alignment of the form member relative to the predetermined survey line; and a track steering control, a cross slope control and an elevation control, each of which are connected to the support frame and constructed to sense the position of the support frame relative to a control line to automatically maintain the curb slip form apparatus in a predetermined aligned position; and an improved apparatus for constructing a control line along a predetermined survey.

3,779,663
DRILL BIT GAUGE

Clyde M. Ruggles, 6058 Fallbrook Ave., Woodland Hills, Calif.

Filed Dec. 20, 1971, Ser. No. 209,554
Int. Cl. B23b *45/14*, *49/00*
U.S. Cl. 408—113 **4 Claims**

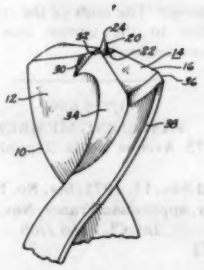


The improved gauge of the invention incorporates both drill bit guide means and drill bit depth regulating means of an improved type. Neither the guide means nor the depth regulating means engages the drill bit so that work surface galling is prevented. The gauge further includes work surface contacting means, drill contacting means and may also include adjusting means engaging the work surface contacting means and drill contacting means.

3,779,664
DRILL WITH GUIDE TIP

Lloyd E. Caley, Seattle; Horace E. Hill, Renton, and Joseph L. Phillips, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 867,204, Oct. 17, 1969, abandoned. This application Dec. 30, 1971, Ser. No. 214,154
Int. Cl. B23b *51/00*
U.S. Cl. 408—225 **4 Claims**

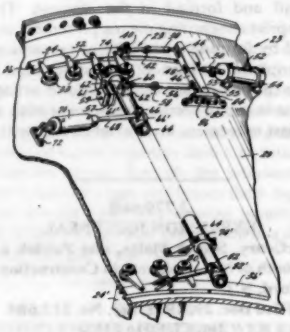


A low-cost, conventional twist drill ground with a unique point configuration that includes a symmetrically-shaped, non-cutting, non-threaded, basically conical tip projecting from the center of the drill point with immediately contiguous cutting edges that enable the drill to generate precision holes in non-ferrous metals and other low-yield strength materials including very thick sections.

3,779,665
COMBINED VARIABLE ANGLE STATOR AND WINDMILL CONTROL SYSTEM

Bemis Caldwell Tatem, Jr., and John Theodore Moehring, both of Cincinnati, Ohio, assignors to General Electric Company, Lynn, Mass.

Filed Sept. 22, 1972, Ser. No. 291,250
Int. Cl. F01d *21/00*, *21/02*, *17/00*
U.S. Cl. 415—123 **5 Claims**



A gas turbine engine is provided with a combined variable angle stator and windmill brake control system for simultaneous variation of the angles of a multiplicity of stages of variable compressor stator vanes together with independent means for closing off the airflow through the aft most row of variable

stator vanes to brake windmilling of the engine in the event that the engine should become inoperative.

3,779,666

FLUID FLOW COMPRESSORS

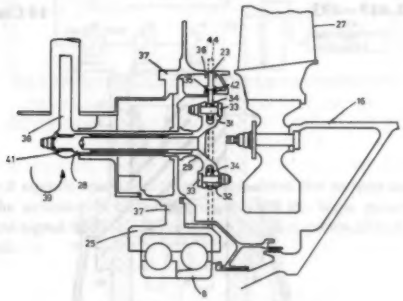
Leonard Stanley Snell, Bristol, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

Filed Dec. 3, 1971, Ser. No. 204,618

Claims priority, application Great Britain, Dec. 17, 1970, 59,871/70

Int. Cl. F01b *25/02*

U.S. Cl. 415—159 **5 Claims**



A fluid flow compressor includes means for arbitrarily obstructing part of the flow area of the compressor duct to improve the compressor efficiency at low flow velocities.

The means comprises a ring arranged in the duct and capable of being expanded in the manner of a circlip by a cam arrangement.

3,779,667

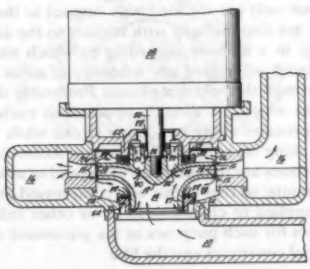
SEMI-SEAL DEVICE

Charles S. Johnson, Laguna Niguel, Calif., assignor to Baker Hydro, Inc., Santa Ana, Calif.

Filed Feb. 24, 1972, Ser. No. 228,945

Int. Cl. F04d *29/08, 29/44*

U.S. Cl. 415—170 A **8 Claims**



A semi-seal device for controlling the flow of water along a rotating shaft, which device is annular and contained in a retainer disposed around the shaft. The containment is loose so that the semi-sealing member may move laterally in its retainer thus temporarily increasing the clearance between the semi-sealing member and the rotating shaft. In addition, the semi-sealing member is deformable and resilient. The lateral movement and deformation properties allow sand or other foreign particles to pass between the semi-sealing member and rotating shaft.

3,779,668

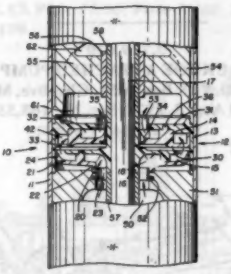
STAGE FOR A CENTRIFUGAL PUMP

William J. Ekey, Jeromesville, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed May 11, 1972, Ser. No. 252,355

Int. Cl. F03b *1/04*

U.S. Cl. 415—199 **10 Claims**



Disclosed is an improved stage adaptable for use in multistage centrifugal pumps which find their primary use in moving liquids from deep wells and the like. The pump can include a motor, rotatable drive shaft, external casing and at least one of the improved stages, each stage having an impeller to impart velocity to the liquid and a diffuser to reduce velocity and increase the pressure to force the liquid to the successive stages and to the pump outlet. The impeller is rotated within a stage housing, nonrotatably mounted within the pump casing, and includes a front and rear plate having vanes therebetween which spiral outwardly from the center to the outer edge of the front plate. The front plate extends radially outwardly of the rear plate and terminates in an axially directed flange having a diameter approximating that of the stage housing but clearanced to rotate therein. Liquid thus exits the impeller axially and is received by the overlying diffuser with a minimum of turbulence.

3,779,669

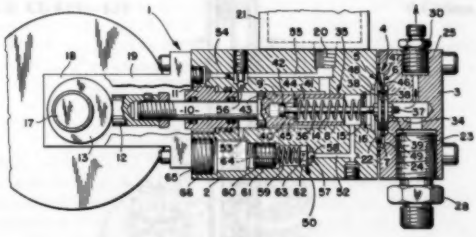
PUMP SPRAY UNIT

Herbert J. Sommer, Wooster, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio

Filed May 22, 1972, Ser. No. 255,562

Int. Cl. F04b *49/00*

U.S. Cl. 417—214 **14 Claims**



Pump spray unit has a lost-motion connection between the pump diaphragm and pump piston which ensures full retraction of the diaphragm during retraction of the piston for obtaining the desired amount of working fluid within the working fluid chamber prior to the pumping stroke of the piston and diaphragm. An adjustable relief valve is also provided for relieving the excess working fluid pressure which is created during standby operation of the pump to the back side of the

piston which causes the piston to move forward out of engagement with its drive cam thereby retaining the piston and diaphragm against movement during standby to minimize wear and power consumption during standby. The high pressure acting on the back side of the piston is bled off through a restricted orifice, and when pumping is resumed the pressure quickly drops to a level at which the piston is again urged by a return spring into engagement with the drive can for reciprocation thereby.

3,779,670

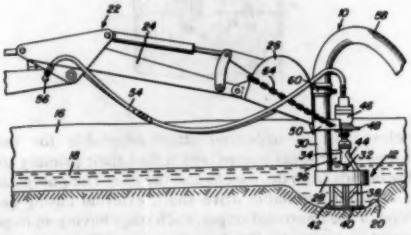
BACKHOE ATTACHED PUMP

Angelo J. Crisafulli, P.O. Box 1051, Glendive, Mont.

Filed Aug. 3, 1971, Ser. No. 168,551

Int. Cl. F04b *17/06*

U.S. Cl. 417—231 **8 Claims**



A pump specifically adapted for attachment to a backhoe and including a hydraulic motor integrally mounted with the pump and being drivingly connected with a source of hydraulic fluid pressure normally available on the backhoe. The pump facilitates removal of water from construction site ditches, excavations, and the like.

3,779,671

HYDRAULIC DRIVEN PISTON PUMP

Robert W. Lybecker, 10510 Luzon, San Antonio, Tex., and Kermit A. Wahrmund, Route 3, Box 232 K, Gatesville, Tex.

Filed Jan. 28, 1972, Ser. No. 221,622

Int. Cl. F04b *35/00*

U.S. Cl. 417—393 **6 Claims**

Apumping system utilizing drive means activating a top pump and a ratchet drive rotary control valve selectively switching fluid pressure to a double acting dual piston dual cylinder bottom pump. The two pumps are interconnected by dual pipes through a rotary valve and a multiplicity of check valves causing the dual pipes to alternatively function as a pressure power line or a delivery line depending on the relative position of the control valve. An alternative spool valve control may be employed in conjunction with any source of fluid pressure to activate the bottom pump.

3,779,672

AIR COMPRESSOR

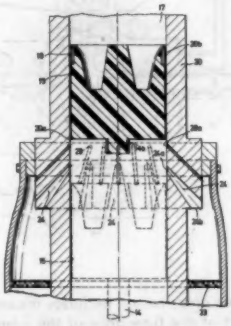
Walter Schroeder, Grenzhausener Weg 8, P. O. Box No. 91 0326, Cologne-Humboldt-Gremberg, Germany

Filed Mar. 1, 1971, Ser. No. 119,478

Claims priority, application Germany, Mar. 3, 1970, P 20 09 770.5; Great Britain, June 18, 1970, 29,577/70

Int. Cl. F04b *7/04*

U.S. Cl. 417—493 **14 Claims**



A compressor which is adapted to operate in a dry condition without any lubricant. The compressor has a cylinder which defines a compression chamber in its interior and which is provided with a gas intake and a gas outlet. A piston which is made substantially entirely of plastic reciprocates in the cylinder and defines a gap with the inner surface thereof, the gas inlet being in the form of nozzle-shaped openings extending through the cylinder wall and inclined with respect to the cylinder axis. In addition to the latter openings there are balancing bores which extend through the cylinder wall to provide a stable reciprocation of the piston, and the axes of these bores not only are inclined with respect to the cylinder axis but they are also inclined with respect to the axes of the inlet openings in a manner according to which air entering through the latter will retard any tendency of air or other gas to leak out through the balancing bores. Preferably there are a pair of pistons which are directly opposed to each other so that one reciprocates along its suction stroke while the other reciprocates along its compression stroke. According to the method the pistons are reciprocated at a speed of at least 1500 strokes per minute, so that in this way compressed air or other gas can be supplied to chemical, food, or other industries in large quantities for such purposes as the pneumatic operation of bulk material conveyors and the like.

3,779,673

FLUID STEPPER MOTOR

Charles J. Ahern, Lathrup Village; Walter F. Datwyler, Jr., Royal Oak, and Rex W. Presley, Livonia, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

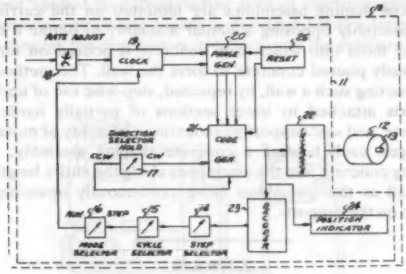
Filed Apr. 24, 1972, Ser. No. 249,441

Int. Cl. G06m *1/12*; F01c *1/02*; F03c *3/00*

U.S. Cl. 418—61 **36 Claims**

A stepper motor of the type in which fluidic logic cooperates with a fluidic actuator to produce a rapid high torque positional displacement of the actuator's output

member, the fluidic logic in response to an input command to change the position of the actuator's output member from a first position to second position generates a sequential set of



coded signals operative to stepwise drive the output member of the actuator in either direction until the logic generates a coded signal corresponding to the position commanded by the input.

3,779,674

HIGH-PRESSURE GEAR PUMP

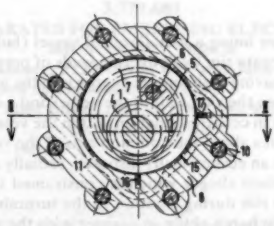
Otto Eckerle, Am Bergwald 3, Malsch, and Robert Jung, Malsch, both of Germany, assignors to said Eckerle, by said Jung

Filed July 19, 1971, Ser. No. 163,750

Claims priority, application Germany, July 17, 1970, P 20 35 575.3

Int. Cl. F01c *21/00*; F03c *3/00*; F04c *1/06*

U.S. Cl. 418—71 **21 Claims**



A high-pressure gear pump with a drive pinion, internal gear ring, and filler wedge, where both the axial thrust and radial thrust are substantially compensated; a deflecting axial thrust plate cooperates with an O-ring to define an axial compensation pressure field; a pair of transverse sealing members, either elastic or radially sliding in grooves, cooperates with the adjacent faces of the periphery of the internal gear assembly and of the housing bore to define a radial compensation pressure field. A bearing ring around the internal gear, together with means for directionally restricting the displacements of the internal gear assembly, allow maintenance of a fixed gear center distance and backlash.

3,779,675

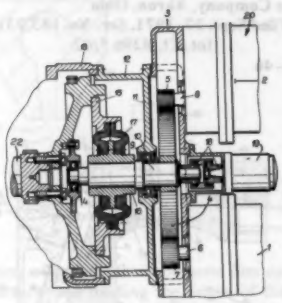
DRIVE SYSTEM FOR A PLURALITY OF WORM DRIVEN COMPRESSORS

Kurt Magdhuber, Rossdorf, and Hinrich Kattentidt, Darmstadt, both of Germany, assignors to Frankfurter Maschinenbau Aktiengesellschaft Vormals Pokorny & Wittekind, Frankfurt am Main, Germany

Continuation of Ser. No. 30,819, April 22, 1970. This application July 31, 1972, Ser. No. 276,823

Int. Cl. F01c *11/00*; F04c *11/00, 23/00*

U.S. Cl. 418—199 **3 Claims**



A worm compressor system includes at least two parallel worm compressors each having a worm shaft with a gear which is driven from a centerally arranged gear of a main shaft. The main shaft is supported in a bearing carried on a wall member closing the transmission gear housing of the two compressors, and constituting a component of a housing part having an opposite end connected to the flange of a driving motor. The main drive shaft extends through this bearing and has a free end in the transmission gear housing carrying the centrally arranged gear in a cantilever fashion. The opposite end of the main shaft is received in a bearing mounted in the flywheel of the driving motor, and a coupling connects the flywheel to the main shaft between the two bearings. A pump has a drive shaft coaxially aligned with the free inner end of the main shaft and connected thereto by a spline-type coupling.

3,779,676

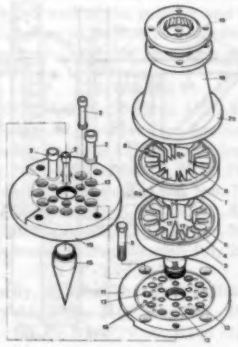
APPARATUS FOR MAKING COMPOSITE PRODUCT

Alain Clair Bernard, Nantes, France, assignor to Alain Clair Bernard, Nantes, France

Filed Oct. 14, 1971, Ser. No. 189,109

Int. Cl. B29f *1/12*

U.S. Cl. 425—131 **9 Claims**



An extruding machine and process is provided for making composite products, such as soap, that comprise two separate

materials joined without mixing. The extruder is comprised of a pair of circular plates and annular plates. The circular plates are joined together by a plurality of tubular members. The annular plates have conduits and radial fins for directing the two separate materials along an axial direction. A cutter and mold are provided for producing the finished product such as striped soap.

3,779,677

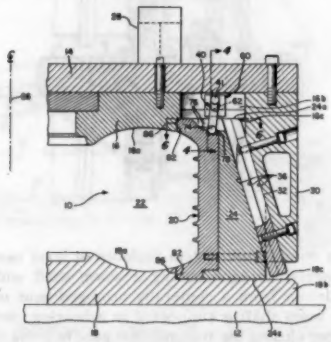
SEGMENTED TIRE MOLD

Alan Greenwood, Kent, Ohio, assignor to The Goodyear Tire and Rubber Company, Akron, Ohio

Filed Sept. 27, 1971, Ser. No. 183,931

Int. Cl. B29h *5/02*

U.S. Cl. 425—46 **12 Claims**



A tire mold in which tread mold segments are moved radially by a coned ring between sidewall plates which bear against the moving segments. Link means connecting each segment to the upper plate enable the segments to be retracted into the ring by moving the upper plate. The link means provides sufficient relative separation between the upper plate and the segments to prevent friction, wear, and binding therebetween during such retraction.

3,779,678

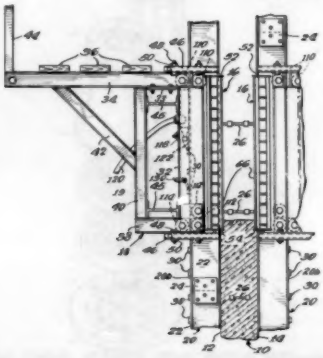
APPARATUS FOR CONSTRUCTING CONCRETE WALLS

Herman Scheller, Eaton, Colo., assignor to Research-Cottrell, Inc., Bridgewater Township, N.J.

Continuation-in-part of Ser. No. 856,326, Sept. 9, 1969, abandoned. This application Feb. 9, 1971, Ser. No. 113,967

Int. Cl. B29c *23/00*

U.S. Cl. 425—65 **12 Claims**



In an apparatus for constructing a high-rising, poured concrete wall or shape, pairs of spaced-apart, upright supports are preliminarily mounted on a foundation and then detachably attached to both sides of at least a partially hardened level of concrete wall and at intervals along the length of the wall for repeated, upward, step-wise use as the wall is being formed; a plurality of carriages are mounted on adjacent supports along both sides of the wall for continuous upward movement as the wall is being cast, and adjustable concrete shaping assemblies are mounted on the carriages each assembly opposing a similar assembly to define a continuous mold into which new concrete is poured on top of previously poured concrete to form the wall. The method of constructing such a wall, by repeated, step-wise use of upright supports attached to lower sections of partially hardened concrete, and said supporting mounting a plurality of movable carriages, each holding a concrete shaping assembly, and pouring concrete into the assemblies along the entire length of the wall as the assemblies move continuously upwardly in unison on the supports.

3,779,679

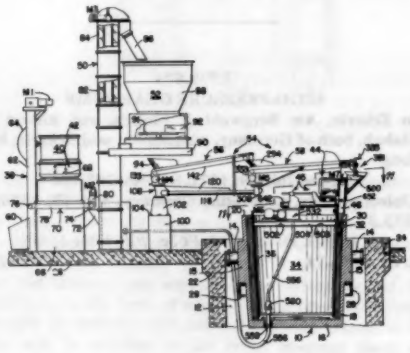
APPARATUS FOR LINING THE WALLS OF METALLURGICAL VESSELS WITH PREPARED REFRACTORY MATERIAL

Angelo J. Bisinella, Niles, and Roy F. Nosek, Berwyn, both of Ill., assignors to Pettibone Corporation, Chicago, Ill.

Filed Aug. 3, 1971, Ser. No. 168,689

Int. Cl. B28b *19/00*

U.S. Cl. 425—110 **21 Claims**



Apparatus for lining a metallurgical vessel (ladle) having a continuous arcuate rim by delivering wads of prepared refractory material having high kinetic energy into the arcuate space existing between the side wall of the vessel and a conformably shaped pattern in centered relation within the vessel. A turntable which rotates about the common axis of the vessel and the pattern carries an eccentrically disposed, radially shiftable, rotary, motor-driven slinger which is constrained to follow the contour of the rim during rotation of the turntable and, thus, maintain its discharge chute in register with the aforesaid arcuate space. A conveyor system receives the lining material from a nearby feeder and delivers a continuous flow thereof to the slinger. The pattern is expansible and contractible to facilitate its removal from the newly-lined vessel.

3,779,680

CONTROL EQUIPMENT FOR AN INJECTION MOULDING MACHINE

Marcel Manceau, 4, rue du Four, Congis, France

Filed Apr. 15, 1971, Ser. No. 134,407

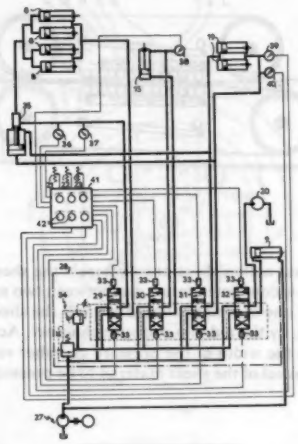
Claims priority, application France, Apr. 17, 1970, 7013891

Int. Cl. B29c *3/06*

U.S. Cl. 425—145 **6 Claims**

Control equipment for an injection-molding machine includes a hydraulic circuit fitted with electrically operated dis-

tributors for controlling the operation of various hydraulic receivers for displacing the various moving elements of the machine. Such electrically operated distributors are of the type that incorporate constriction means regulable under the action of hydraulic pilot units acting as pressure reducers and the displacement of which is a function of the strength of the current applied to corresponding control electromagnets. A pressure compensating means is provided for regulating the flow through the distributors irrespective of the pressure used.



Means convert the position of the various moving elements of the machine and the pressure in the supply passages of the corresponding hydraulic receivers into electrical values. Means display the required predetermined position relating to the speed of displacement of the moving elements and to the pressure in the corresponding hydraulic receivers. Electronic apparatus is provided for processing such electrical values and for producing control signals for the electromagnets of the various distributors as a function of such predetermined conditions.

3,779,681

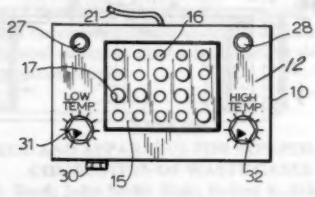
APPARATUS FOR EMBEDDING ELECTRON MICROSCOPY TISSUE

Thomas D. Kinney, 3120 Devon Rd., and John E. P. Pickett, 3323 Pinafore Dr., both of Durham, N.C.

Filed July 6, 1971, Ser. No. 159,998

Int. Cl. B01f *1/00*

U.S. Cl. 425—160 **1 Claim**



Tissue particles intended to be thinly sliced for electron microscopy examination are placed in capsules filled with an epoxy resin embedding mixture and the capsules are received by a holder which is both vibrated and sequentially heated by an apparatus programmed to a time-temperature sequence which apparatus and method drastically reduces embedding time.

3,779,682

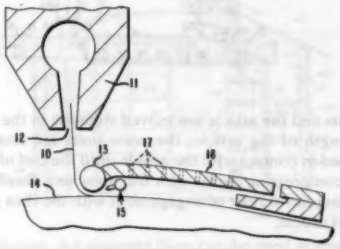
QUENCHING MOLTEN THERMOPLASTIC FILM

C. George Huskey; Charles J. Resler, Jr., and Sidney C. Sanders, Circleville, all of Ohio, assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Mar. 8, 1972, Ser. No. 232,763

Int. Cl. B29h *5/24*

U.S. Cl. 425—174.8 E **6 Claims**



In the casting of molten thermoplastic film onto a moving quenching surface and pinning the edges of the film to the quenching surface an improvement is realized by applying additional pinning force to the edge portions of the extruded film to prevent localized thinning of the film.

3,779,683

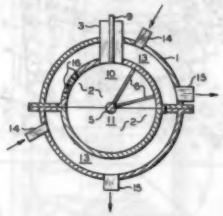
CARBON BLACK MIXING APPARATUS

Robert E. Dollinger, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 27, 1972, Ser. No. 248,312

Int. Cl. B01f *13/02*; **C09c** *1/58, 1/60*

U.S. Cl. 425—222 **1 Claim**



A jacketed pelleter having a perforated inner wall for the introduction of a portion of that material introduced into the jacket through the wall of the pelleter and into contact with that material adhering to the wall of the pelleter.

3,779,684

CONTINUOUS CURING APPARATUS

Hugh Lorain Folkes, St. Leonards'-on-Sea Sussex, England, assignor to Dunlop Holdings Limited, London, England

Division of Ser. No. 45,604, June 12, 1970, Pat. No. 3,714,317, which is a continuation-in-part of Ser. Nos. 775,347, Nov. 13, 1968, abandoned, and Ser. No. 28,290, April 22, 1970, abandoned, which is a continuation of Ser. No. 592,131, Nov. 4, 1966, abandoned. This application July 20, 1972, Ser. No. 273,367

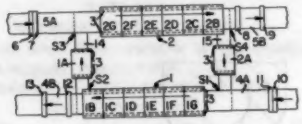
Claims priority, application Great Britain, Nov. 25, 1967, 53716/67; July 14, 1966, 31657/66; Nov. 10, 1965, 47594/65

Int. Cl. B29d *29/00*; **B29h** *7/22*

U.S. Cl. 425—233 **4 Claims**

An apparatus for heating and compressing an elongated article is provided. The invention comprises the use of a plurality of individual press units which are heated; the press units

are moved into heating and compression relationship with opposed surfaces of the article; each press unit is moved successively into engagement with the article and into contacting end to end relationship with the previous press unit, the units being moved relative to the surface only in a direction perpendicular to the surfaces when in contact with the surfaces; the



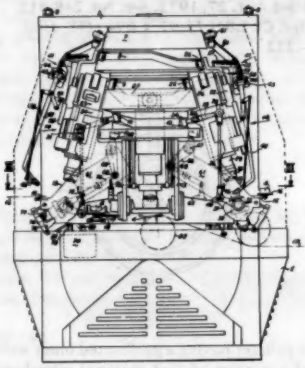
press units and the article are moved stepwise in the direction of the length of the article; the press units are continuously maintained in contact with the article until the end of the heating and compressing cycle; with the press unit finally successively being moved out of engagement with the thus produced elongated article.

3,779,685

ROTARY MACHINE FOR CONTINUOUSLY MOLDING AND PRESSING SOAP CAKES

Ottorino Pisoni, Viale Diaz, Busto Arsizio, Italy

Filed Sept. 7, 1971, Ser. No. 178,154
Claims priority, application Italy, Sept. 8, 1971, 29494 A/71
Int. Cl. B28b *15/00*
U.S. Cl. 425—236 **10 Claims**



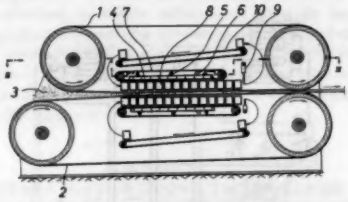
Soap cakes to be shaped in a mold are transported on a feeding conveyor to a loading zone of a rotary press where they are seized by grippers and placed on a lower die whose support forms part of a molding assembly rotating continuously about a vertical axis at the speed of the feeding conveyor which follows a path partly concentric with the orbit of the assembly. A plunger above the die support, forming part of the same assembly, carries an upper die which in a pressing zone descends onto the lower die to shape the soap cake deposited thereon. In an unloading zone, the shaped soap cake is transferred onto a discharge conveyor whose path is curved about the axis of rotation inside the orbit of the molding assembly. An array of six such assemblies are mounted on a pair of coaxial rings rotating therewith, these rings having teeth in mesh with the conveyors along the concentric portions of their paths. The conveyor speed therefore equals the speed of the molding assemblies along the loading and unloading zones, each of which extends over a quadrant of the assembly orbit whereas the pressing zone occupies two quadrants.

3,779,686

CONTINUOUS ACTION SHEET PRESS

Into Isak Kerttula, Luotsikatu 18 B, and Per Arno Jaatinen, Kaivosvoudintie 4 B, both of Helsinki, Finland

Filed Feb. 24, 1972, Ser. No. 229,008
Claims priority, application Finland, Feb. 25, 1971, 557/71
Int. Cl. B29j *5/04*; **B29c** *3/00*, *15/00*
U.S. Cl. 425—371 **8 Claims**



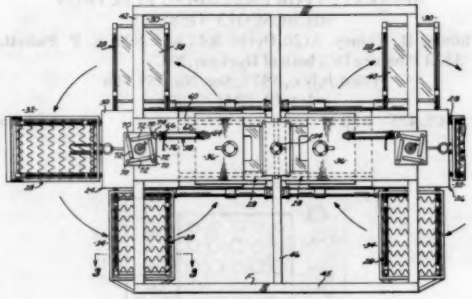
A continuous action sheet press wherein the sheet material to be pressed is conducted into a gap between two moving surfaces, at least one of which is urged towards the sheet material to be pressed, by the aid of a pressure chamber. According to the invention the width of the pressure chamber varies in the direction of travel of the sheet material to be pressed.

3,779,687

APPARATUS OF VACUUM FORMING

John A. Alesi, Santa Monica, Calif., assignor to Formex Manufacturing Inc., Santa Monica, Calif.

Division of Ser. No. 558,641, June 20, 1966, abandoned. This application May 14, 1970, Ser. No. 48,722
Int. Cl. B29c *17/00*
U.S. Cl. 425—383 **4 Claims**



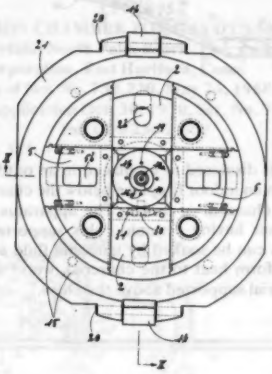
Apparatus for forming first and second sheets of heat-fusible plastic into a hollow structure when the sheets are heated to an initial temperature and mechanically prestretched into the cavities of first and second mold members. Vacuum is then applied between each of the sheets and such mold cavities to draw the sheets into their formed configuration. The sheets are then reheated to a higher temperature and the mold members urged together to effect fusing engagement of the sheets.

3,779,688

MOLD FOR FORMING PARTS OF COMPLEX SHAPE OF INJECTABLE OR THERMOSETTING PLASTIC MATERIAL

Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France

Continuation of Ser. No. 40,573, May 26, 1970, abandoned. This application May 9, 1972, Ser. No. 251,783
Claims priority, application France, May 29, 1969, 6917968
Int. Cl. B29c 7/00
U.S. Cl. 425—441 7 Claims



In a mold for casting parts of complex shape having a central core and multiple flat elements parallel to each other and in spaced relation of the same type as cam units of injectable or thermosetting plastic material and for the automatic ejection of said parts during opening of the mold which can be employed in an automatic press and comprising a stationary portion, a first group of slides which are mounted on two slide-blocks displaceable within said stationary portion in opposite directions at right angles to the movement of opening of the mold and which serve to define the interval between the elements of the molded part and a second group of slides which are mounted on two further slide-blocks displaceable in opposite directions at right angles to the first and which serve to define the profiles of said part elements, said four slide-blocks being closed in the centripetal direction in the position of closure of the mold and maintained towards the center of said mold by the conical wall of a movable cap of the mold and separated at the time of opening of the mold by inclined columns rigidly fixed to said movable cap and adapted to form ramps which are intended to cooperate with inclined bores formed in said slide-blocks, the essential property which lies in the fact that the inclined bores are of greater diameter than the columns in order to provide said oolumns with play which can be taken up at the beginning of the opening travel of the mold so that the opening of said mold can be initiated prior to commencement of lateral displacement of the slide-blocks in the centrifugal direction.

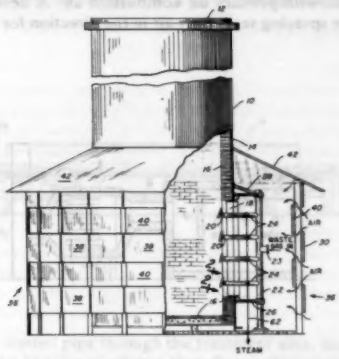
3,779,689

METHOD AND APPARATUS FOR NON-POLLUTING COMBUSTION OF WASTE GASES

Robert D. Reed; John Smith Zink; Robert E. Schwartz, all of Tulsa, Okla.; Horst Glomm, Frankfurt, Germany; John C. Corble, St. Albans, England, and Harold F. Koons, Tulsa, Okla., assignors to John Zinc Company, Tulsa, Okla.

Filed Jan. 10, 1972, Ser. No. 216,659
Int. Cl. F23n 1/00
U.S. Cl. 431—89 14 Claims

A non-polluting waste-gas disposal system for processing plants or other operation subject to variable quantities of waste gas for disposal. The system includes a low-level burner normally adapted to handle the usual volumes of plant waste gas, required to be disposed, without visible flame, smoke or noise pollution. An elevated flare can be used in combination to consume gases in excess of the normal capacity of the low-level flare.

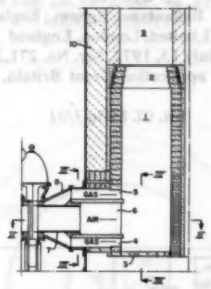


3,779,690

GASEOUS MIXING DEVICE FOR REGENERATOR HEATERS

Rolf Rossow, Bochum, Germany, assignor to Dr. C. Otto & Comp. SmbH, Bochum, Germany

Filed Sept. 27, 1971, Ser. No. 184,042
Claims priority, application Germany, Sept. 26, 1970, P 20 47 453.7
Int. Cl. F23c 5/18
U.S. Cl. 431—173 4 Claims



A gaseous mixing device for heaters for blast furnace stoves and the like characterized in that the mixing device is formed entirely from refractory materials and is constructed so as to impart a swirling or rotational movement to a mixture of air and combustible gas to thoroughly admix the same before it is introduced into a combustion chamber.

3,779,691

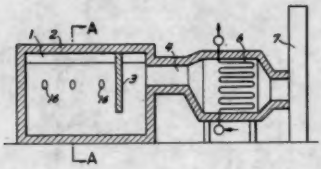
APPARATUS FOR BURNING HIGH VISCOSITY LIQUID FUELS

Masanobu Sakata; Yoji Kitaoka, both of Ichihara; Nobuo Itami, Okayama, and Yoshitada Tomoyasu, Tamano, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd. and Petrochemical Industries Limited, Tokyo, Japan

Division of Ser. No. 57,242, July 22, 1970, abandoned. This application May 10, 1972, Ser. No. 251,872
Claims priority, application Japan, May 8, 1970, 45/39449
Int. Cl. F23c 7/02
U.S. Cl. 431—190 1 Claim

A furnace for burning highly viscous combustibles in which the materials are sprayed into a preheated combustion

chamber. The spraying device has a fuel-spraying nozzle which is associated with an annular discharge nozzle for spraying medium such as compressed gas, steam, etc. The spraying medium combines with the fuel exteriorly of the nozzle and is combined with primary air combustion air. A device is provided for spraying secondary air in the direction for accelerating the sprayed stream of fuel to sweep the refractory wall within the furnace for effecting complete combustion of any unburned particles deposited therein. The exhaust gases are discharged through a flue into a remote heat exchanger for recovering the heat of combustion prior to passage through the stack.



3,779,692

LIGHTER WITH A CAPACITOR DISCHARGE IGNITION SYSTEM

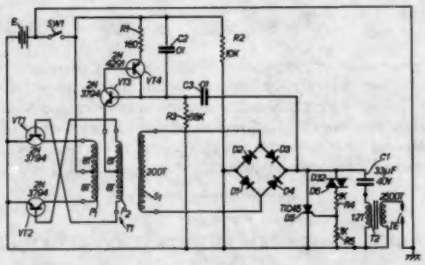
Walter Henderson Ballantyne, Egham, England, assignor to Dunhill Lighters Limited, London, England

Filed July 13, 1972, Ser. No. 271,266

Claims priority, application Great Britain, July 13, 1971, 32,869/71

Int. Cl. F23q *3/01*

U.S. Cl. 431—266 **9 Claims**



A smoker's lighter with a capacitor discharge ignition system is provided with a transistorised multivibrator and step-up transformer to increase the level of voltage from internal cells to a higher level for charging the capacitor. The output of the transformer is connected to a full-wave rectifier and an automatic discharge circuit is provided to discharge the capacitor when a predetermined voltage is reached.

3,779,693

CHARCOAL IGNITING APPARATUS

Neal D. McKenney, 777 Mulberry St., and John Dennis, Jr., 963 Walnut St., both of Macon, Ga.

Filed Mar. 15, 1972, Ser. No. 234,885

Int. Cl. F23q *13/04*

U.S. Cl. 431—327 **8 Claims**

Apparatus is disclosed to be placed in an outdoor charcoal barbeque or in an indoor fireplace below the charcoal or wood to ignite the charcoal or wood. The apparatus comprises a metal container having ceramic chips supported therein so that the chips can be soaked by ignitable fluid and ignited to provide a uniform heat to the charcoal, wood or other combustible material supported above the chips.

3,779,694

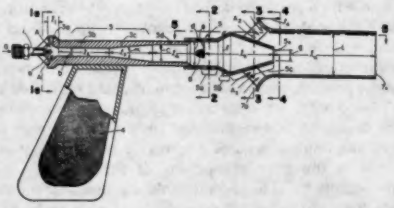
HEAT GUN

Dimiter S. Zagoroff, 13 Cliff St., Marblehead, Mass.

Filed Nov. 10, 1971, Ser. No. 197,207

Int. Cl. F23d *13/12, 15/02*

U.S. Cl. 431—347 **7 Claims**



Hand held heat gun producing heated air in 250° to 1,000° F range employs high performance internal combustion burner discharging exhaust gas at velocity above 4,000 feet per minute and temperature on order to of stoichiometric burning temperature, i.e. 3,450° F for propane fuel. High velocity exhaust gases enter mixing zone preferably in a divergent manner and with perimeter of gas flow cross-section at least 25 percent greater than the perimeter of a circle of equal area, to provide an extended gas-air interface The exhaust gas has a high volume pumping and mixing action upon ambient air, producing in a practical small distance a useful flow of treating air at the desired temperature. Preferably the burner outlet is of elongated form with decreasing cross-section towards outlet, e.g. a multiple legged outlet cross-section. Another form has a shower-head like series of small outlets, with diverging axes. Preferably a positioning means set a minimum distance between work piece and outlet, to ensure mixing. Where the exhaust gas stream is exposed to admission of increasing air

along the length, the positioning means sets the working temperature. Preferably a shield extends about the exhaust gas stream, preferably in the form of a tube with space for ambient air. With apertures along the tube length, the mass of air increases in mass and decreases rapidly in temperature there along, so length sets discharge temperature. With a closed wall tube the tube cross-section and its inlet in the vicinity of the burner outlet defines the amount of ambient air entrained and thereby sets the discharge temperature. Burners useful in this heat gun are of high capacity type with jet pump feed, pressure recovery passage and flame holder positioned at entry of fuel mixture into the burner chamber.

3,779,695

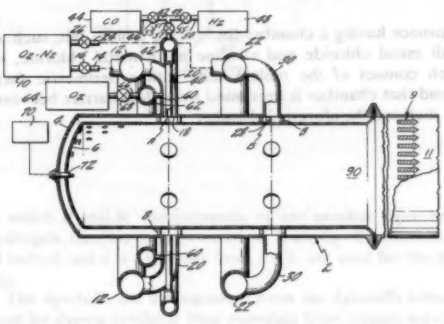
COMBUSTION CHAMBER FOR GAS DYNAMIC LASER

John Chamberlain, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 733,220, May 24, 1968, abandoned. This application Oct. 30, 1970, Ser. No. 73,624

Int. Cl. F23d *15/00*

U.S. Cl. 431—351 **8 Claims**



A combustion chamber for use with a nozzle in a gas dynamic laser to produce a proper specie in a lasing region downstream of said nozzle is formed having two radial injection planes spaced axially apart. At the first plane an oxidant is injected through a plurality of holes located circumferentially around the chamber with a fuel being injected by nozzles located concentrically within said holes. Oxygen and nitrogen, a diluent, are injected at the second radial plane. Means for injecting additional oxygen into the oxidant is provided at the first plane. In one modification, the oxidant is shown as O_2 with N_2 added while the fuel is the combination of CO and H_2. O_2 and N_2 also are injected at the second plane. In another modification, the oxidant injected at the first plane is also O_2 with N_2 added while the fuel is CO and H_2 with only N_2 being injected at the second plane. An ignition means is shown with both modifications. The combustion system burns CO and H_2 and O_2 and dilutes with N_2 in two stages. A mixing chamber extends downstream of said second plane.

3,779,696

PIPE HANDLING METHOD AND APPARATUS

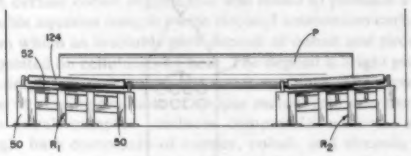
Ernest C. Poore, and John A. Goforth, both of Gadsden, Ala., assignors to Midwestern Specialties Ltd., Tulsa, Okla.

Division of Ser. No. 119,197, Feb. 26, 1971, Pat. No. 3,690,472. This application Apr. 25, 1972, Ser. No. 247,404

Int. Cl. B65g *11/00*

U.S. Cl. 432—6 **3 Claims**

An apparatus for moving relatively large diameter sections of coated pipe through a treating stage such as a heating chamber in a manner wherein the coated portions of the pipe secions are not engaged, thus protecting the coating during the treating operation. The coated pipe is initially received by an elevator apparatus which moves the pipe to an intermediate station for transfer to a conveyor apparatus which moves the coated pipe through the treatment area, such as an oven or the like for discharge therefrom subsequent to the treating or heating operation. The pipe is supported in a manner precluding damage to the beveled pipe ends and precluding engagement with the coated portions thus greatly facilitating the coating of large diameter pipe.



3,779,697

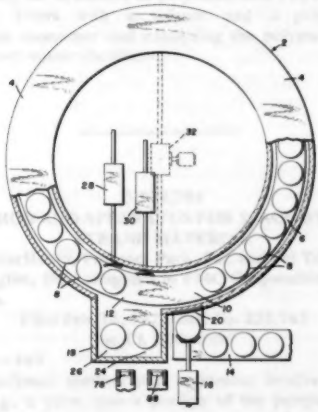
MEANS AND METHOD OF HEATING AND HANDLING LARGE COILED BILLET ROD FOR METAL ROLLING

Frank A. Alexander, Jr., West Boylston, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Feb. 28, 1972, Ser. No. 229,836

Int. Cl. F27b *9/14*

U.S. Cl. 432—8 **10 Claims**



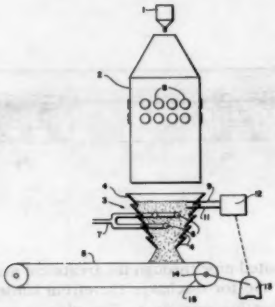
Means and method for reheating a very long coiled billet to rolling temperature in a furnace with a moving hearth. The furnace has at its terminal end a heated vestibule in which the coil remains at proper rolling temperature while it is being slowly unwound and delivered to the first stand of a rolling mill.

3,779,698

MAKING OF DEVITRIFIED PELLETS

Ernst A. Siemssen, Gwynedd, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed June 14, 1972, Ser. No. 262,624
Int. Cl. F27b 1/02
U.S. Cl. 432—13 7 Claims



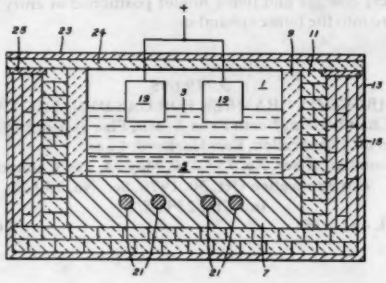
Method and apparatus for making a devitrified light-weight aggregate. Particles of clay or a similar bloatable material are dropped through a tower furnace and bloated to spherical aggregate which is collected and held at temperature until it has devitrified.

3,779,699

FURNACE STRUCTURE

Allen S. Russell, New Kensington, Pa., and Lester L. Knapp, Maryville, Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 181,116, Sept. 16, 1971. This application Mar. 15, 1973, Ser. No. 341,719
Int. Cl. F23m 5/00
U.S. Cl. 432—248 1 Claim



Furnace having a chamber for holding molten salt, such as alkali metal chloride and alkaline earth metal chloride, in which contact of the molten salts with a perimetric shell around that chamber is prevented by a glass barrier between that shell and the aforesaid chamber.

3,779,700

EXHAUSTION DYEING OF SYNTHETIC FIBER MATERIALS WITH ANTHRAQUINONE DYESTUFFS AND WATER-IMMISCIBLE HALOGENATED ALIPHATIC HYDROCARBONS

Peter Wegner, Koeln; Rutger Neeff, Leverkusen; Volker Hederich, and Gunter Gehrke, both of Koeln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

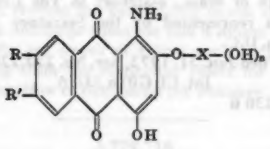
Filed July 30, 1970, Ser. No. 59,728

Claims priority, application Germany, Aug. 1, 1969, P 19 39 095.5

Int. Cl. D06p *1/20*

U.S. Cl. 8—39 11 Claims

Exhaustion process for the dyeing of synthetic fibre materials from organic solvents, characterised in that anthraquinone dyestuffs containing hydroxyl groups, of formula



in which R and R′ indepentently of one another represent a hydrogen, fluorine or chlorine atom, X is a C_2 - C_6-alkanepolyyl radical and n is a number from 1 – 5, are used for the dyeing.

The dyestuffs are distinguished from the dyestuffs hitherto used for dyeing synthetic fibre materials from organic solvents by a significantly better affinity and an increased fastness to sublimation.

3,779,701

NON-AQUEOUS DYEING OF POLYAMIDES WITH WATER-SOLUBLE AMORIC DYESTUFFS DISSOLVED IN HALOGENATED HYDRO-CARBONS

Anton Zenhausern, Reinach, and Jakob Buhler, Muttenz, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 15, 1970, Ser. No. 98,455

Claims priority, application Switzerland, Dec. 16, 1969, 18708/69

Int. Cl. C09b *1/26*; D06p *1/20*

U.S. Cl. 8—39 8 Claims

A process for the non-aqueous dyeing or printing of nitrogen-containing fibre material, especially fibre material made from natural or synthetic polyamide, with certain water-soluble anionic anthraquinone dyestuffs from non-polar, aprotic organic solvents is disclosed. By said process even, strongly-coloured dyeings having good fastness properties are obtained; said process is moreover advantageous in that it can be carried out without the use of solubilising agents and without fire hazard in a uniform solvent which can be easily regenerated.

3,779,702

BRIGHT PINK, LAVENDER AND BLUE MINERAL DYEING SINGLE BATH PROCESS FOR CELLULOSICS

Charles J. Conner, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 5, 1972, Ser. No. 250,560

Int. Cl. D06p *3/60*

U.S. Cl. 8—52 12 Claims

A certain cobalt organic salt was found to produce a water soluble aqueous complex with zirconyl ammonium carbonate, from which an insoluble pink deposit of cobalt and zirconia is deposited on cellulosics by heat. The deposit is bright pink and is completely resistant to hot water washings. The incorporation of varying amounts of copper metaborate into the aqueous cobalt complex produces compatible, uniform, soluble single bath complexes of copper, cobalt, and zirconia which produce lavender to bright blue insoluble deposits on cellulosics by heating (curing). By increasing the ratio of zirconia (ZrO_2) to cobalt (Co) by about 7 or 8 to 1, in the bath, lavender to bluish-pink deposits are produced by heat curing without copper. Using low ratios of approximately 1:1 of cobalt and zirconia, produces bright pink mineral pigments on heating (curing), while gradually increasing the copper ratio to cobalt, from 1:1 to 1.5 to 1, produces lavender to bright blue insoluble deposits on heating (curing). The copper containing mineral dyeings on cellulosic are fungicidal and algaecidal. Bright color shades, resistant to light and microorganisms, are desirable for the protection and sales appeal of textiles and other cellulosics.

3,779,703

POLYOLEFIN FIBERS WITH AMINOSILONES POLYMERIZED WITHIN THE FIBERS

Giuliana C. Tesoro, Dobbs Terry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 471,496, June 22, 1965, Pat. No. 3,542,502. This application Oct. 1, 1970, Ser. No. 77,350

Int. Cl. D06m *15/30*

U.S. Cl. 8—115.5 7 Claims

Improving the dyeability of polyolefin fibers by treating the polyolefin fibers with a solvent and a polymerizable aminosilane monomer and catalyzing the polymerization of the monomer within the fibers.

3,779,704

METHOD AND APPARATUS FOR SPACE DYEING STRAND MATERIAL

Richard MacHenry, Prospect Park, Pa., and Pei Tsing Chang, Wilmington, Del., assignors to FMC Corporation, Philadelphia, Pa.

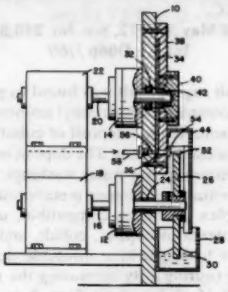
Filed Feb. 14, 1972, Ser. No. 225,762

Int. Cl. D06p *5/00*

U.S. Cl. 8—149 11 Claims

The disclosed method and apparatus involve pulling a strand, e.g., a yarn, past a portion of the periphery of the wheel which is rotated so as to constantly pick up dye liquid from a bath into which a lower segment of the wheel extends. An air jet is directed toward the running strand across a peripheral segment of the wheel so as to blow dye liquid from the wheel onto the strand. A shield having apertures therein is

moved so as to alternately align apertures and solid areas with the air jet whereby the dye liquid is blown onto the yarn only



when an aperture in the shield is aligned with the jet to thus produce a strand having spaced dyed and undyed portions.

3,779,705

PROCESS FOR DYEING FIBERS OR FABRICS OF AROMATIC POLYAMIDES

Kazuo Kitamura; Fumiki Takabayashi, and Setsuo Yamada, all of Ibaraki, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 13, 1971, Ser. No. 171,771

Claims priority, application Japan, Aug. 14, 1970, 45/71249; Aug. 31, 1970, 45/76126; Dec. 16, 1970, 45/111713; Dec. 18, 1970, 45/113812

Int. Cl. D06p *1/68*

U.S. Cl. 8—173 **7 Claims**

A process for dip dyeing aromatic polyamide fibers or fabrics with acid dyes with good dyeability and levelling properties, without modifying measures which may cause deterioration of the desirable properties of the aromatic polyamides, which comprises dip dyeing fibers or fabrics of an unmodified aromatic polyamide in a dye bath comprising an acid dye of the monosulfonic acid, monosulfonic acid-carboxylic acid, disulfonic acid, disulfonic acid-carboxylic acid, or carboxylic acid and at least 1 percent by weight (based on the weight of the solution) of a neutral or acidic inorganic salt, in the presence of a swelling agent having a phenolic hydroxyl group, and alkali metal salts thereof; and soaping the dyeing obtained.

3,779,706

PROCESS FOR BULK STERILIZATION, MINIMIZING CHEMICAL AND PHYSICAL DAMAGE

Samuel V. Nablo, Lexington, Mass., assignor to Energy Sciences, Inc., Burlington, Mass.

Filed Oct. 4, 1971, Ser. No. 186,427

Int. Cl. A23l *3/26*; **A61l** *1/00*; **A23c** *3/06*

U.S. Cl. 21—54 R **4 Claims**

Technique for bulk-sterilizing a wide range of substances by pulsed monochromatic electron beams of rather critical irradiation dose values and rates that enable effective destruction of viable micro-organisms and the like but without significant chemical or physical damage to the substance.

3,779,707

SURGICAL STERILIZATION METHOD

Donald J. Tabone, 638 Benner Rd. No. 202, Allentown, Pa.

Filed May 28, 1971, Ser. No. 147,883

Int. Cl. A61l *1/00, 3/00*

U.S. Cl. 21—58 **3 Claims**

A method and apparatus for sterilizing articles such as surgical and dental instruments by immersing the articles in a container of boiling tetrachloroethylene. The container has a lower, heated portion, a cooled upper portion wherein vapor from the boiling liquid condenses, and an intermediate vapor column. Articles to be sterilized are cleaned and then submerged in the boiling liquid for up to about 16 minutes; then the articles are raised slowly through the vapor to thereby exit the container, sterile and dry. The container may be provided with a sliding lid, with thermostatically controlled high temperature cut-offs for the heating element disposed in the lower portion, and in the upper portion of the container.

ERRATUM

For Class 21—58 see:
Patent No. 3,779,791

3,779,708

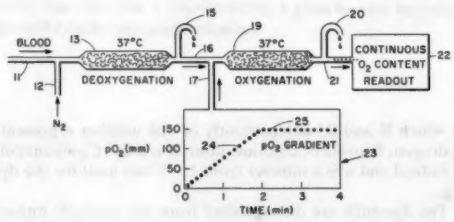
METHOD AND MEANS FOR DETERMINING OXYHEMOGLOBIN ASSOCIATION AND DISSOCIATION CURVES OF WHOLE BLOOD OR OTHER LIQUIDS

Alan H. Runck, Marblehead, and Cesare Robert Valeri, Boston, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1972, Ser. No. 222,226

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B **31 Claims**



A method of and apparatus for the automated measurement of the oxyhemoglobin association and dissociation curves of whole blood, erythrolysates or other liquids are described. The samples to be measured are studied in an environment of constant hydrogen ion concentration (pH) and temperature. They are initially deoxygenated by continuous flow washing and then are exposed to a linear gradient of increasing oxygen concentration to obtain the oxygenation curve. The samples are then oxygenated by continuous flow washing and next are exposed to a linear gradient of decreasing oxygen concentration to obtain the deoxygenation curve. The percentage of oxygen saturation and the oxygen tension of the sample are continuously determined substantially instantaneously by colorimetric analysis using indigo carmine reagent, to give the final oxygen association-dissociation curves.

3,779,709

DEVICE FOR REMOVING NOXIOUS SUBSTANCES DISCHARGED FROM CHIMNEYS

Kiichi Yamada, No. 15-12, 1-Chome, Jingumae, Shibuya-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 46,299, June 15, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,005

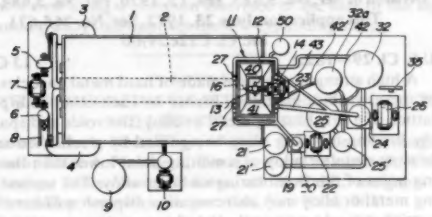
Claims priority, application Japan, Jan. 31, 1970, 45/8123

Int. Cl. B01d *47/06*

U.S. Cl. 23—260 **6 Claims**

A device for removing noxious substances discharged from chimneys and the like, which includes a pair of filter units disposed in each of two flues defined in the chimney, so as to be selectively put into service by a flip over vane. Each flue has two filter sections: a first section where a viscous liquid

cleanser for dust and other particles of the discharge is intermittently sprayed unto a porous filler disposed therein when the flue is in use, while a washing liquid is sprayed onto the filler for washing said particles away from the filler together with the liquid cleanser when the flue is not in use; and a



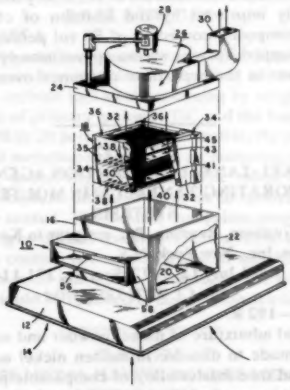
second section where a neutralizer is sprayed to the porous filler disposed therein for neutralizing acidic or basic components of the discharge when the flue is in use. Staggered V-shaped troughs are provided below each section to catch liquid draining from the respective fillers for recirculation while permitting flow of flue gas up the chimney.

3,779,710

AIR CLEANING APPARATUS

Norman Burstein, Cherry Hill, and Richard C. Ditzler, Cinnaminson, both of N.J., assignors to Smokontrol Corporation of America, Cinnaminson, N.J.

Filed Mar. 22, 1971, Ser. No. 126,497
Int. Cl. B01d *53/00;* **F04b** *37/00*
U.S. Cl. 23—288 F **4 Claims**



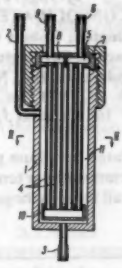
Apparatus for removing polluting vapors from air by high temperature oxidation of the vapors in the presence of a precious metal catalyst employs a source of radiant energy for heating the catalyst and pollutants. The energy source is insulated from the polluted air as it moves past the catalyst by a quartz glass which surrounds the source. The catalyst is applied to a cellular refractory block which forms passages for the air. Alternatively, the catalyst is applied to glass tubes that serve as the insulating shield for a plurality of spaced heaters, with the spaces between the glass tubes serving as passages for the polluted air.

3,779,711

CATALYTIC REACTOR DESIGNED FOR CARRYING OUT CONJUGATE CHEMICAL REACTIONS

Vladimir Mikhailovich Gryaznov, Leninskie gory, zona, L., kv. 11; Alexandr Petrovich Mischenko, Khersonskaya ulitsa, 7, korpus 4, kv. 515; Viktor Sergeevich Smirnov, Kutuzovsky prospekt, 26, kv. 555, and Sergei Ivanovich Aladyshev, ulitsa Grimau, 7/2, korpus 4, kv. 77, all of Moscow, U.S.S.R.

Filed July 19, 1971, Ser. No. 163,709
Int. Cl. B01j *9/04;* **C07b** *3/00;* **C07c** *3/58*
U.S. Cl. 23—288 R **2 Claims**



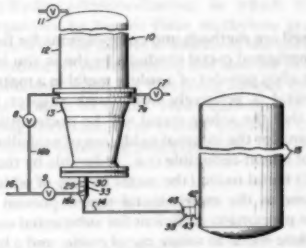
A catalytic reactor for carrying out conjugate chemical reactions, comprising a housing, whose inner space is adapted for carrying out one of said conjugate reactions, and a system of thin-walled tubes designed for carrying out thereinside the other of said conjugate reactions and arranged freely inside the housing. The tubes are manufactured from a material that is selectively permeable to the common reactant of the conjugate reactions and catalytically active with respect to both conjugate reactions. The tubes are made fast in the reaction vessel lid which is provided with manifolds adapted for the introduction of the reactants and for the removal of the reaction products, the free ends of the tubes connected to the inlet manifold communicating with the free ends of the tubes connected to the outlet manifold.

3,779,712

PARTICULATE SOLIDS INJECTOR APPARATUS

William Lemont Calvert, Westfield, and Richard Herman Handwerk, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,108
Int. Cl. B01j *9/20;* **B65g** *65/30, 53/40*
U.S. Cl. 23—288 E **9 Claims**



Apparatus is provided for injecting finely divided solid materials into a reaction zone. The apparatus includes a reservoir, selected means for advancing a predetermined particle size of solid materials to the lower portion of the reservoir, metering means for metering predetermined amounts of solid materials selected by the selecting means to gas entrainment

means and conduit means to deliver gas entrained solid material into a reaction chamber, the conduit means including a capillary tube having an inside diameter of .030 to .125 inches. A method for injecting finely divided solid materials into a polymerizing reaction chamber for producing polyolefin is also included.

3,779,713

DUCTILE CONSOLIDATED BERYLLIUM

John P. Denny, Shillington; Robert C. Solbach, Reading, and Pen George J. Jagaciak, Barrington, all of Pa., assignors to Kawecki Berylco Industries, Inc., New York, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,516
Int. Cl. B22f 3/00
U.S. Cl. 29—182.5 4 Claims

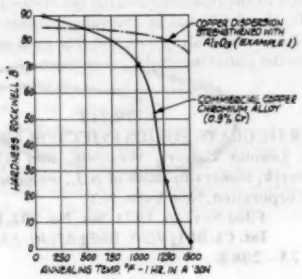
A mass of consolidated beryllium particles is described having a ductility characterized by a tensile elongation of at least about 2 ½ percent in all three orthogonal directions.

3,779,714

DISPERSION STRENGTHENING OF METALS BY INTERNAL OXIDATION

Anil V. Nadkarni, Glen Burnie, and Erhard Klar, Pikesville, both of Md., assignors to SCM Corporation, Cleveland, Ohio

Filed Jan. 13, 1972, Ser. No. 217,506
Int. Cl. B22f 7/00; B23p 3/00
U.S. Cl. 29—182.5 18 Claims


COPPER DISPERSION STRENGTHENED WITH Al2O3 (EXAMPLE I)
COMMERCIAL COPPER CHROMIUM ALLOY (0.9% Cr)
HARDNESS ROCKWELL "B"
ANNEALING TEMP. °F - 1 HR. IN A 'SIN'

Disclosed are methods and compositions for forming dispersion-strengthened metal products by the in situ internal oxidation of an alloy powder of a solute metal in a matrix metal. The matrix metal is relatively noble with respect to the solute metal so that the solute metal will be preferentially oxidized. The oxidant for the internal oxidation of said alloy powder is a mixture of a heat-reducible (i.e., reducible by the solute metal with heat) metal oxide (the metal moiety of which is different or the same as the matrix metal that is present in the alloy) present in proportion sufficient for substantial oxidation of all of said solute metal to solute metal oxide; and a hard, refractory metal oxide (the metal moiety of which is different from or the same as the solute metal present in the alloy). The alloy powder and the oxidant are intimately mixed and heated in an inert atmosphere for internal oxidation. Upon internal oxidation, the composite residue of spent oxidant comprises an in situ heat-reduced metal intimately associated with the refractory metal oxide, and such residue is coalesced with the rest of the mass by hot working.

3,779,715

HEAT RESISTANT HIGH STRENGTH COMPOSITE STRUCTURE OF HARD METAL PARTICLES IN A MATRIX, AND METHOD OF MAKING THE SAME

Charles F. Wendler, St. Clair Shores, and Charles S. Baum, Grosse Pointe Farms, both of Mich., assignors to Permanence Corporation, Detroit, Mich.

Division of Ser. No. 5,823, Jan. 15, 1970, Pat. No. 3,684,497.
This application June 23, 1972, Ser. No. 265,671
Int. Cl. C22c 29/00
U.S. Cl. 29—182.1 13 Claims

A high strength structure made of hard metal particles, such as metal carbide particles, brazed to each other in a porous lattice of a first brazing metal or alloy, the voids and spaces in the brazing metal or alloy being filled by a solidified second brazing metal or alloy of a melting point lower than the melting point of the first brazing metal or alloy. The second brazing metal or alloy may also contain a dispersion of hard metal particles, such as metal carbide particles, generally of a smaller size than that of the original hard metal particles. The structure is made by mixing a predetermined proportion of hard metal particles with the first brazing metal or alloy in the form of a powder, and by sintering in a furnace so as to obtain a substantially porous structure, followed by a second pass in the furnace of the porous structure covered with the second brazing metal or alloy in a powder form so as to impregnate the porous structure with the melted second brazing metal or alloy.

3,779,716

TANTALUM CARBIDE-TANTALUM FIBER COMPOSITE MATERIAL

Robert E. Riley, and James M. Taub, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 18, 1972, Ser. No. 218,686
Int. Cl. C22c 29/00
U.S. Cl. 29—182.8 1 Claim

The thermal stress resistance of refractory metal carbides is substantially improved by the addition of chopped metal fibers. A composite consisting of 50 vol percent TaC-50 vol percent chopped Ta wire shows approximately a 40 percent improvement in thermal stress resistance over that of pure TaC.

3,779,717

NICKEL-TANTALUM ADDITION AGENT FOR INCORPORATING TANTALUM IN MOLTEN NICKEL SYSTEMS

Robert A. Gustison, Reading, Pa., assignor to Kawecki Berylco Industries, Inc., New York, N.Y.

Filed July 12, 1972, Ser. No. 271,114
Int. Cl. B22f 3/02, 3/04
U.S. Cl. 29—192 R 4 Claims

A physical admixture of nickel powder and scrap tantalum powder is made to dissolve in molten nickel as rapidly as a conventional true master alloy of comparable proportions of these metals in pure form by pressing the admixture of the two metal powders under a pressure of at least 10,000 pounds per square inch.

3,779,718

CORROSION RESISTANT THERMOSTATIC LAMINATE

Leonard S. Maisner, Dearborn Heights, Mich., assignor to W. M. Chace Company, Detroit, Mich.

Filed Oct. 2, 1972, Ser. No. 294,086
Int. Cl. B23p 3/00
U.S. Cl. 29—195.5 3 Claims

An improvement is disclosed for a bimetal consisting essentially of a high expanding nickel-copper-manganese alloy with controlled ratios of nickel, copper, and manganese bonded

along a common interface to a low expanding nickel-cobalt-iron alloy also having a narrow weight range for each component. The improvement comprises providing a corrosion resistant thermostatic laminate having high flexivity and high electrical resistivity by metallurgically bonding an alloy consisting essentially of from about 19 to about 23 percent nickel, from about 1.5 to about 3.5 percent chromium and the balance iron along a common interface to the side of the high expanding alloy that opposes the low expanding alloy.

3,779,719

DIFFUSION COATING OF JET ENGINE COMPONENTS AND LIKE STRUCTURES

Eugene V. Clark, Northridge; William J. Martin, Huntington Beach; Peter J. Plambeck, Torrance, and Maurice R. Commanday, Palos Verdes Estates, all of Calif., assignors to Chromalloy American Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 731,631, May 23, 1968, abandoned. This application Dec. 3, 1970, Ser. No. 94,991

Int. Cl. B32b *15/00, 15/02;* **C23c** *9/02*

U.S. Cl. 29—197 **15 Claims**

Greatly increased thermal fatigue cracking resistance of high temperature resistant base metals such as cobalt and nickel and their alloys used to fabricate jet engine components and like parts is realized by diffusion coating the base metal with chromium, silicon and aluminum in particular proportions to diffuse into the base metal to a uniform depth and distribution between and across intergranular boundaries in the base metal, enabling slowed initiation of thermal fatigue cracking in the diffusion coating as well as reduced corrosion in the base metal.

3,779,720

PLASMA SPRAYED TITANIUM CARBIDE TOOL STEEL COATING

John L. Ellis, Whiteplains; M. Kumar Mal, Nanuet, and Stuart E. Tarkan, Monsey, all of N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,497

Int. Cl. B32b *15/18*

U.S. Cl. 29—195 A **7 Claims**

A composite article of manufacture is provided comprising a metal substrate having a plasma-deposited adherent coating of a titanium carbide tool steel containing by weight about 10 to 80 percent of primary grains of TiC and the balance essentially about 90 to 20 percent of a steel matrix, the matrix being characterized metallographically by an austenitic decomposition product containing martensite. The metal substrate is preferably aluminum, although other metal substrates, such as steel, can be coated. The method comprises quench-depositing the coating by plasma spraying onto the substrate such that the resulting coating is one characterized metallographically by the presence of martensite. Preferably, the titanium carbide grains should be rounded to assure a low friction surface.

3,779,721

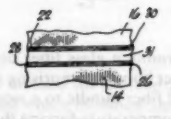
COMPOSITE METAL HAVING BONDED MEMBERS OF BERYLLIUM

Virgil L. Herman, Torrance, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 6, 1970, Ser. No. 9,238

Int. Cl. B32b *15/00*

U.S. Cl. 29—199 **1 Claim**



Two metallic surfaces in substantially uniform area contact with an intervening layer of a brazing alloy are joined by intermolecular migration of the alloy into both surfaces while the alloy is maintained in liquid form by prolonged furnace heating. Degradation of the metallic surfaces which would normally result from such prolonged heating due to the excessive migration of the brazing alloy into the base metal is prevented by a compatible metallic membrane applied to one or both sides of the stated intervening layer.

3,779,722

PROCESS FOR DESULFURIZING FUEL

David Tatum, 325 Dartmouth Ave., Swarthmore, Pa.

Filed Feb. 23, 1972, Ser. No. 228,617

Int. Cl. C10l *9/10;* **C10b** *57/00;* **C10a** *1/00*

U.S. Cl. 44—1 R **6 Claims**

A process for desulfurizing fuel includes producing spaced vortices of molten metal and passing the fuel with hydrogen donor material and a flux material through the spaced vortices to provide an interaction there-between.

3,779,723

THIXOTROPIC COMPOSITIONS

Glenn Fuller, and Alfred John Lawrence Toombs, both of Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 15, 1963, Ser. No. 302,444

Int. Cl. C10l *7/02*

U.S. Cl. 44—7 C **14 Claims**

Stable dispersions or suspensions of solid metal or metal hydride particles or powders in liquid hydrocarbons in mobile thixotropic suspensions are prepared by mixing metals and their hydrides into hydrocarbon slurries with a gellant of a monoester of a C_{4-18} hydrocarbyl mercapto methyl phosphonic acid.

3,779,724

NITROGEN-CONTAINING CARBOHYDRATE DERIVATIVES AND HYDROCARBON FUEL COMPOSITIONS CONTAINING SAME

Paul M. Kerschner, Trenton; Elmer J. Badin, Hightstown, and Aldo Cresti, New Brunswick, all of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Apr. 29, 1970, Ser. No. 33,039

Int. Cl. C10l *1/22*

U.S. Cl. 44—63 **6 Claims**

Compounds useful as additives in hydrocarbon fuels are prepared by reacting the lactone of a carbohydrate acid with a N-hydrocarbylhydrocarbylenediamine in which the amino groups are separated by two or three methylene groups. The reaction products are the isomeric amides of the carbohydrate acid and the hydrocarbylenediamine and also the heterocyclic compounds obtained when the foregoing amides cyclize with elimination of a mole of water. Hydrocarbon fuel compositions containing these additives exhibit enhanced carburetor detergency and rust inhibiting properties.

3,779,725

COAL GASSIFICATION

William P. Hegarty, and David L. Say, both of Wescoesville, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

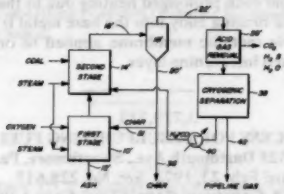
Filed Dec. 6, 1971, Ser. No. 205,138

Int. Cl. C10j *3/00*

U.S. Cl. 48—202 **10 Claims**

A method for producing a synthetic pipeline gas by reacting

a carbonaceous fuel in a gasifier to form a gas and thereafter subjecting the gas to additional process steps including a final



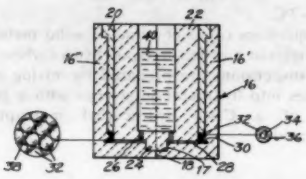
cryogenic separation of high methane content gas for use as the pipeline gas.

3,779,726

METHOD OF MAKING A METAL IMPREGNATED GRINDING TOOL

Reginald C. Fisk, West Boylston, and Edgar B. Carver, Whitinsville, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Mar. 7, 1969, Ser. No. 805,207
Int. Cl. B24d *3/10*
U.S. Cl. 51—295 **1 Claim**



Metal bonded abrasive tools are manufactured in which the abrasive grits are uniformly spaced and distributed throughout the tool, by encapsulating one or several abrasive grits in a porous layer of powdered metallic material and preferably sintering the layer, thereby forming individual abrasive grit containing particles which are then placed in a mold and the spaces between the particles filled with a conventional metallic bonding agent. Heat, and in some instances heat and pressure, is applied which permanently binds the mixture together in the desired form. The process is particularly well suited for the fabrication of metal bonded diamond wheels where the metal-bond to diamond-grit volume ratio is relatively high.

3,779,727

RESIN-BONDED ABRASIVE TOOLS WITH METAL FILLERS

Richard H. Siqui, Holden, and Harvey M. Cohen, Randolph, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 61,905, Aug. 7, 1970, abandoned. This application July 19, 1971, Ser. No. 163,976The portion of the term of this patent subsequent to May 23, 1989, has been disclaimed.
Int. Cl. C08g *51/12*; **C08h** *17/12*
U.S. Cl. 51—298 **5 Claims**

High ratios of metal removed to abrasive tool wear are achieved when resin-bonded diamond or cubic boron nitride abrasive tools include in the bond from 10 to 60 percent by volume of silver, silver coated copper, or copper powder in the presence of from 5 to 30 percent by volume of a solid lubricant. Other fillers such as finely divided metal oxides or carbide such as silicon carbide may be present in an amount of from 0 to 40 percent by volume, depending upon the total content of metal and lubricant. The diamond wheels or tools of this invention are particularly suitable for the dry grinding of carbide tools. The cubic boron nitride wheels employ metal clad boron nitride abrasive particles and are particularly suitable for the dry grinding of hard steel tools, that is, high speed steels such as T15, M2, M3, and M4. Solid lubricants useful in this invention include organic polymers such as

polytetrafluoroethylene, fluorinated ethylene polymers, chlorinated hydrocarbon, fluorinated ethylene propylene polyethylene styrene-butadiene, acrylonitrile-butadiene-styrene, polyurethane, polyforaldehyde, polycarbonate, and nylon and inorganic crystalline solids such as boron nitride, tungsten disulfide, graphite, metal coated graphite, molybdenum disulfide, niobium diselenide tungsten diselenide, and fluorinated graphite.

3,779,728

HIGH TEMPERATURE - HIGH STRENGTH ALLOY GLASS FIBER FORMING BUSHING

James H. Hansen, Rt. 3, and Ralph W. Getz, 421 Alford Dr., both of Newark, Ohio

Continuation-in-part of Ser. No. 884,689, Dec. 12, 1969, Pat. No. 3,622,289, Continuation of Ser. No. 192,293, Oct. 26, 1971. This application Mar. 13, 1973, Ser. No. 340,861
Int. Cl. C03b *37/02*
U.S. Cl. 65—1 **18 Claims**

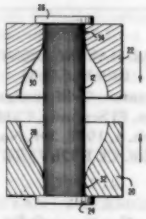
A high temperature-high strength alloy comprising platinum, rhodium and one or more metals consisting of molybdenum, tungsten, iridium, and rhenium is fabricated into apparatus adapted to receive and controllably emit molten material for attenuation into glass fibers.

3,779,729

METHOD OF FORMING COMPOSITE FIBER BUNDLE

John W. Hicks, Jr., Fiskdale, Mass., assignor to The Bendix Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 178,296, Mar. 8, 1962, Pat. No. 3,240,106. This application Mar. 14, 1966, Ser. No. 534,009
Int. Cl. C03c *27/06*; **C03b** *23/20*
U.S. Cl. 65—4 **4 Claims**



1. A method of forming a glass fiber device including the steps of: forming a fiber bundle comprising a plurality of parallel fibers, heating said fiber bundle to a working temperature, while at the working temperature forcing the ends of said bundle towards each other while contraining the ends of said bundle from radial movement in a plane normal to the longitu-

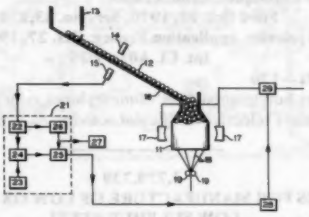
dinal axis of said bundle to form a fused bundle of glass fibers having generally parallel ends of generally the original cross-section dimension and an outwardly curved bulbous center section immediately adjacent the ends of the bundle.

3,779,730

CONTROL FOR GLASS MARBLE, FEEDING, MELTING, AND FIBER FORMING UNIT

Dennis Lee Ramge, Waterville, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,314
Int. Cl. C03c *3/00, 37/00*
U.S. Cl. 65—9 8 Claims



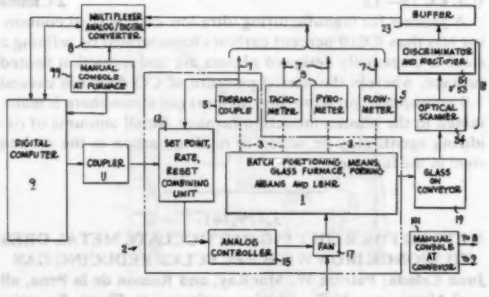
An automatic output control whereby the output of an inorganic thermoplastic material melting and fiber forming unit is controlled by adjusting the amount of heat applied to the melting unit in accordance with a control signal. The control signal is derived by comparing the actual rate of thermoplastic material entering the melting and fiber forming unit with a desired standard.

3,779,731

CONTROLLED GLASS MANUFACTURING PROCESS

E. Kears Pollock, Allison Park, and Forrest K. Umbel, Verona, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 7, 1972, Ser. No. 224,110
Int. Cl. C03b *5/24*
U.S. Cl. 65—29 5 Claims



Apparatus and a method for the control of a glass-making process are provided which minimize the occurrence of optical defects in the glass by the selective adjustment of some, but not all, of the control loops of the process responsive to a determination of which loops are critical.

3,779,732

METHOD OF MAKING GLASS LASERS OF INCREASED HEAT DISSIPATION CAPABILITY

Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 884,358, Dec. 11, 1969, Pat. No. 3,687,799. This application Apr. 16, 1971, Ser. No. 134,892The portion of the term of this patent subsequent to May 2, 1989, has been disclaimed.
Int. Cl. C03c *21/00*
U.S. Cl. 65—31 14 Claims

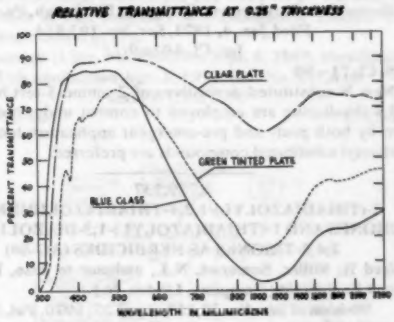
Glass lasers containing at least 1 mole percent of lithium oxide based on the total glass composition expressed in oxide content and having a compressive stress surface layer whereby increased strength and increased heat dissipation capability is obtained. The compressive stress surface layer has essentially the same composition as the remainder of the glass laser except that the concentration of lithium ions is less than the remainder of said glass laser, and the concentration of ions of a different alkali metal is greater than the remainder of the glass laser. Laser glasses are generally first acid washed and then contacted with a salt of an alkali metal other than lithium at an elevated temperature and for a sufficient period of time to replace a portion of the lithium ions in the surface of the glass laser with the ions of the different alkali metal and thereby form the compressive stress layer in the surface, but for a time insufficient to produce any substantial relaxation of the stress formed in the surface layer. As a result of this treatment there is developed on the surface of the glass laser a thin surface layer of low order tension and a thicker underlayer of high compressive stress. The tension surface layer is then removed by acid wash to expose the compression layer.

3,779,733

METHOD OF MANUFACTURING HEAT ABSORBING GLASS

Bhogaraju V. Janakirama-Rao, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 5,796, Jan. 26, 1970, Pat. No. 3,652,303. This application Nov. 30, 1971, Ser. No. 203,404
Int. Cl. C03b *5/16, 3/04*
U.S. Cl. 65—32 15 Claims



An improved method of making a ferrous ion-containing, heat absorbing glass article is disclosed. The improvement resides in incorporating iron and tin in the glass, and establishing and maintaining during the glass melting, refining and forming period at least 80 percent of the iron in the glass in the ferrous state. Further, sufficient tin is maintained in the stannous state to act as an internal reducing agent to prevent oxidation of the ferrous ion to the ferric species in a subsequent glass reheating step.

3,779,734

METHOD OF MAKING COPPER-COLORED RUBY GLASS

Paul Simonfi, Turda, and Viorel Cristea, Timisoara, both of Romania, assignors to Fabrica de Sticlarie Turda, Turda, Romania

Continuation-in-part of Ser. No. 207,673, Dec. 13, 1971, abandoned, which is a continuation of Ser. No. 812,880, Apr. 2, 1969, abandoned.

Filed Apr. 24, 1972, Ser. No. 246,901

Int. Cl. C03b 5/16; C03c 3/20, 3/08

U.S. Cl. 65—136 3 Claims

A process for making copper-colored ruby glass in which a copper-tin alloy (bronze) is wetted with sodium silicate water glass solution and introduced into a soda-lime glass batch, together with potassium nitrate, as an oxidizing agent, and in the absence of reducing agents, melted at up to 1,480°C and in which ruby-red coloration appears upon rapid cooling.

3,779,735

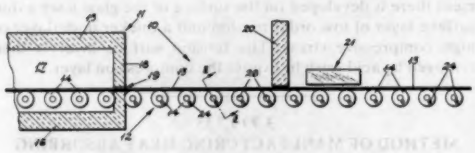
HEAT SINK FOR TUBULAR CONVEYOR ROLLS

Roger P. King, Waterville, Ohio, assignor to Libby-Owens-Ford Company, Toledo, Ohio

Filed July 19, 1971, Ser. No. 163,585

Int. Cl. C03b 29/04

U.S. Cl. 65—356 7 Claims



Reducing warping of tubular rolls employed in conveying sheet material at elevated temperatures. A liquid or gaseous medium is maintained within the interior of the rolls to act as a heat sink for equalizing the wall temperature circumferentially around and longitudinally along the rolls, thereby minimizing warping due to differentials in temperature.

3,779,736

1,3,4-THIADIAZINE HERBICIDES

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 4, 1971, Ser. No. 103,814

Int. Cl. A01n 9/12

U.S. Cl. 71—90 4 Claims

New N-substituted derivatives of 2-amino-5-tert.butyl-6H-1,3,4-thiadiazine are employed to combat undesired vegetation by both post- and pre-emergent application techniques, carbamyl substituted compounds are preferred.

3,779,737

2-(THIADIAZOLYL)-1,2,4-THIADIAZOLIDINE-3-5 DIONES AND 1-(THIADIAZOLYL)-1,3-DIAZOLIDINE-2,4,5-TRIONES AS HERBICIDES (AG-80)

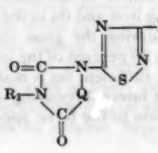
Alfred H. Miller, Somerset, N.J., assignor to Esso, Research and Engineering Company, Linden, N.J.

Division of Ser. No. 32,463, April 27, 1970, Pat. No. 3,651,075. This application Nov. 23, 1971, Ser. No. 201,565

Int. Cl. A01n 9/22

U.S. Cl. 71—90 17 Claims

Compositions of matter characterized by the following structural formula:



wherein R_2 can be one selected from the group consisting of hydrogen, C_1-C_8 alkyl, C_3-C_8 cycloalkyl, C_7-C_{10} aralkyl, C_1-C_4 dialkyl amino, C_6-C_{10} aryl optionally substituted by C_1-C_4 alkyl, C_3-C_8 alkene, C_3H_8 alkyne, chlorine, bromine or nitro; R_1 can be the same or different as R_2, and can also include C_1-C_4 alkylmercapto; and Q is one selected from the group consisting of C=O and S, have been shown to possess pesticidal activity especially pre- and post-emergent herbicidal activity.

3,779,738

HERBICIDAL PARA-TERT-BUTYLPHENYL UREA

Daniel Pillon; Pierre Poignant, both of Lyon, and Rodolphe Caffiero, Crezieu La Varenne, all of France, assignors to PERRO, Societe pour de Developpement et la Vente de Specialities Chimiques, Lyon, France

Filed Oct. 22, 1970, Ser. No. 83,230

Claims priority, application France, Oct. 27, 1969, 6936835

Int. Cl. A01n 9/20

U.S. Cl. 71—120 5 Claims

N-p-tert-butylphenyl-N'N'-dimethylurea, or PTBU, is found to have selective herbicidal activity.

3,779,739

PROCESS FOR MANUFACTURE OF LOW OXYGEN AND LOW SULPHUR STEEL

Toshio Adachi, and Kiyohide Hayashi, both of Nagoya, Japan, assignors to Daido Seiko Kabushiki Kaisha, Kuridashi, Nagoya-shi, Aichi-ken, Japan

Filed Dec. 22, 1970, Ser. No. 100,835

Claims priority, application Japan, Dec. 26, 1969, 44/104331

Int. Cl. C21c 5/52; C22b 9/10

U.S. Cl. 75—12 3 Claims

A process for manufacturing low oxygen and low sulphur steel in plasma arc furnace with or without induction heating under the condition of inert gas and special flux.

3,779,740

PROCESS FOR MANUFACTURE OF ULTRA LOW CARBON STEEL BY MEANS OF PLASMA ARC REFINING

Toshio Adachi, and Kiyohide Hayashi, both of Nagoya, Japan, assignors to Daido Seiko Kabushiki Kaisha, Aichi-ken, Japan

Continuation of Ser. No. 100,768, Dec. 22, 1970, abandoned. This application Feb. 9, 1973, Ser. No. 331,119

Claims priority, application Japan, Dec. 23, 1969, 44/103649

Int. Cl. C21c 5/52

U.S. Cl. 75—12 2 Claims

A process for manufacturing ultra low carbon steel containing less than 0.010 percent carbon characterized by refining a steel in a specially designed plasma arc and induction heated furnace, wherein the partial pressure of CO does not exceed 1.0 atmosphere pressure, and an inert gas atmosphere is maintained in the plasma-induction furnace. Small amounts of oxidizing agents may be added to oxidize carbon in the molten steel in the furnace.

3,779,741

METHOD FOR REDUCING PARTICULATE METAL ORES TO SPONGE IRON WITH RECYCLED REDUCING GAS

Juan Celada; Patrick W. MacKay, and Ramon de la Pena, all of Monterrey, N. L., Mexico, assignors to Fierro Esponja, S.A., Monterrey, N. L., Mexico

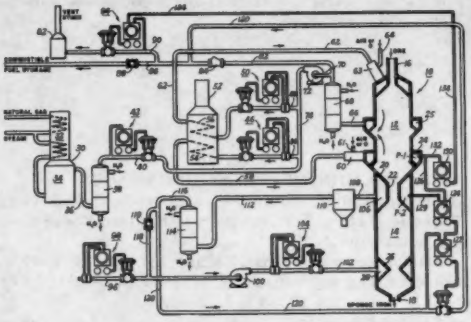
Filed Oct. 15, 1971, Ser. No. 189,560

Int. Cl. C21b 13/02

U.S. Cl. 75—35 11 Claims

A method and apparatus is disclosed for achieving improved reduction efficiency in the reduction of particulate metal ores, e.g., iron ore, in a vertical shaft, moving bed reactor having a reduction zone in which a hot reducing gas is

caused to flow through a portion of the ore bed to reduce the metal ore thereof to metal, e.g., sponge iron. The improved efficiency is achieved by using a splitflow of reducing gas to the reduction zone of the reactor. In one embodiment of the invention separate reducing gas streams are supplied to the top and bottom of the reduction zone and combined near the center of the reduction zone and removed from the reactor. In



another embodiment of the invention reducing gas is fed to a point near the center of the reduction zone, caused to flow both upwardly and downwardly through the ore in the reduction zone and removed at points near the top and bottom of the reduction zone. By using the disclosed split-flow systems, the residence time of the metal-bearing material within the reactor can be reduced and the productivity of the reactor thereby increased.

3,779,742

METHOD OF REMELTING A FROZEN METAL PLUG IN THE CERAMIC NOZZLE OF A METALLURGICAL VESSEL

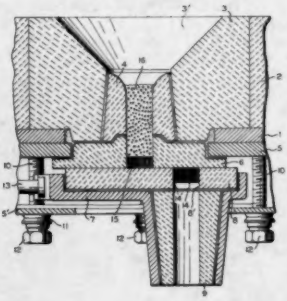
Hans-Reinhard Fehling, Zug, Switzerland; Horst Hase, Wiesbaden, and Hans-Joachim Kutzer, Wiesbaden-Rambach, both of Germany, assignors to Didier-Werke A.G., Wiesbaden, Germany

Filed Oct. 16, 1970, Ser. No. 81,289

Claims priority, application Germany, Dec. 4, 1969, P 19 60 801.6

Int. Cl. C21c *7/00*

U.S. Cl. 75—46 **8 Claims**



A method of remelting a frozen metal plug in the ceramic nozzle of a metallurgical vessel, particularly a pouring ladle equipped with means for controlling the nozzle. An exothermic material that ignites at a temperature below the freezing temperature of the metal melt, is introduced into the outlet orifice of the closed nozzle.

3,779,743

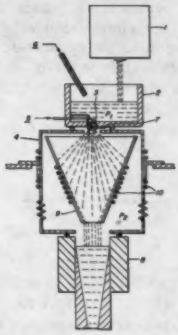
CONTINUOUS CASTING WITH IN-LINE STREAM DEGASSING

Robert G. Olsson, Edgewood Boro, and Ethem T. Turkdogan, Pittsburgh, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 148,551, June 1, 1971. This application Apr. 24, 1972, Ser. No. 247,036

Int. Cl. C21c *7/10*; **B22d** *11/10*

U.S. Cl. 75—49 **9 Claims**



In a continuous casting process, a tundish feeds a molten metal stream through a "vacuum" chamber in contact with the mold. Discrete gas bubbles are injected into the molten metal, prior to its exit through a nozzle orifice in the tundish, so that the bubbles are entrained with the metal entering the "vacuum" chamber. The expansion of the gas bubbles in the chamber breaks the metal stream into a spray of fine droplets with the concurrent removal of dissolved gases from the metal. The degassed metal is then fed into the top of the mold and is continuously cast.

3,779,744

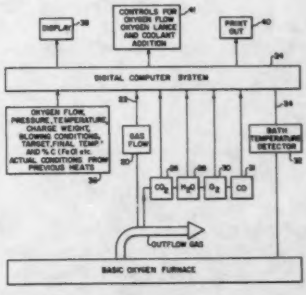
MODIFICATION AND IMPROVEMENT TO DYNAMIC BOF CONTROL

Lucius G. Matteson, Pittsburgh, and Norman R. Carlson, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 855,596, Sept. 5, 1969, abandoned. This application Apr. 5, 1972, Ser. No. 241,416

Int. Cl. C21c *5/30*

U.S. Cl. 75—60 **13 Claims**


DISPLAY
CONTROLS FOR OXYGEN FLOW OXYGEN LANCE AND COOLANT ADDITION
PRINT OUT
DIGITAL COMPUTER SYSTEM
OXYGEN FLOW, PRESSURE, TEMPERATURE, CHARGE WEIGHT, BLOWING CONDITIONS, TARGET FINAL TEMP. AND % C (Fe O) etc. ACTUAL CONDITIONS FROM PREVIOUS HEATS
GAS FLOW
BATH TEMPERATURE DETECTOR
OUTFLOW GAS
BASIC OXYGEN FURNACE

A method is disclosed for dynamically controlling the refining of a bath of iron of known weight by blowing it with oxygen containing gas to provide a desired final carbon level utilizing instantaneous values of carbon-oxidation rate to determine the end of the blow.

3,779,745

CARBIDE ALLOYS SUITABLE FOR CUTTING TOOLS AND WEAR PARTS

Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 802,625, Feb. 26, 1969, Pat. No. 3,690,962. This application Sept. 7, 1972, Ser. No. 287,143

Int. Cl. C22c *27/00, 29/00*

U.S. Cl. 75—176 **5 Claims**

This invention relates to refractory metal bonded carbide alloys for use as cutting tools and in other applications where high hardness and abrasion resistance are required. The desired fine-grain, lamellar microstructure is obtained preferably by casting eutectic, or near-eutectic composition alloys of a Group IVa metal (titanium, zirconium, hafnium), tungsten and carbon which may contain certain alloying and inert materials. For selected applications, the composites may be fabricated by powder-metallurgical techniques.

3,779,746

CARBIDE ALLOYS SUITABLE FOR CUTTING TOOLS AND WEAR PARTS

Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.

Division of Ser. No. 802,625, Feb. 26, 1969, Pat. No. 3,690,962. This application Sept. 8, 1972, Ser. No. 287,307

Int. Cl. C22c *27/00, 29/00*

U.S. Cl. 75—176 **32 Claims**

This invention relates to refractory metal bonded carbide alloys for use as cutting tools and in other applications where high hardness and abrasion resistance are required. The desired fine-grain, lamellar microstructure is obtained preferably by casting eutectic, or near-eutectic composition alloys of a Group IV*a* metal (titanium, zirconium, hafnium), tungsten and carbon which may contain certain alloying and inert materials. For selected applications, the composites may be fabricated by powder-metallurgical techniques.

3,779,747

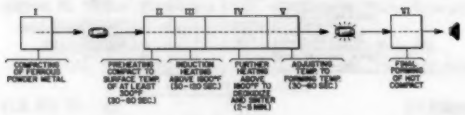
PROCESS FOR HEATING AND SINTERING FERROUS POWDER METAL COMPACTS

Robert L. Conta, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Sept. 5, 1972, Ser. No. 285,965

Int. Cl. B22f *3/24*

U.S. Cl. 75—200 **21 Claims**


I
II
III
IV
V
VI
COMPACTING OF FERROUS POWDER METAL
PREHEATING COMPACT TO SURFACE TEMP OF AT LEAST 500°F (30-60 SEC.)
INDUCTION HEATING ABOVE 1800°F (30-150 SEC.)
FURTHER HEATING ABOVE 1800°F TO DEOXIDIZE AND SINTER (2-6 min.)
ADJUSTING TEMP TO FORMING TEMP (30-40 SEC.)
FINAL FORMING OF HOT COMPACT

An induction field is utilized for rapidly raising the temperature of a ferrous powder metal compact to a sintering temperature where the compact is deoxidized and its particles coalesced into a homogenous mass. In order to overcome a characteristic incubation period which delays initial increase in temperature of such a compact in an induction field, the outer surfaces of the compact are preheated for a relatively short time by known heating means to raise its surface temperature to about 400° F prior to subjecting the compact to a magnetic induction field. After the preheating step, heating in the induction field is used to raise the temperature of the entire compact to a level above 1,800° F, and this temperature is maintained for a sufficient period of time to deoxidize and sinter the compact. After the heating and sintering treatments, the compact is cooled to a temperature of about 1,500°–1,900 ° F for a final forming operation which establishes a useful, full, dense, finished shape.

3,779,748

METHOD OF PROTECTING IMAGES

Michael Mosehauser, Spencerport, and Orville C. Rodenberg, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 854,324, Aug. 29, 1969, abandoned. This application Aug. 11, 1971, Ser. No. 170,948

Int. Cl. G03g *13/20, 13/22*

U.S. Cl. 96—1 R **17 Claims**

A method is disclosed for applying a protective overcoat to developed images, such as a developed electrostatic charge pattern. The protective overcoat is applied electrophoretically from a dispersion of transparent resin particles in an electrically insulating carrier liquid. The process involves the formation of a developed image on an image-bearing member having associated therewith a conductive backing. An external electrical source is then provided. Next, an electrical field and a resulting electrical bias potential is provided between the electrical source and the conductive backing. While the bias potential is applied, a dispersion of transparent charge-bearing resin particles in an electrically insulating carrier liquid is applied to the member with the result that the resin particles are uniformly deposited over the image-bearing surface of the member.

3,779,749

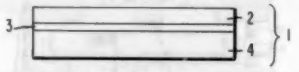
METHOD OF CHARGING IN ELECTROPHOTOGRAPHY

Masamichi Sato, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 10, 1971, Ser. No. 179,349

Int. Cl. G03g *13/02, 13/22*

U.S. Cl. 96—1 C **3 Claims**



An electrophotographic material comprising a photoconductive isolating layer on an electrically conductive layer is charged without the need for grounding the sheet by simultaneously applying to the photoconductive side of the sheet a corona discharge of one polarity before the developing station and a corona discharge of the opposite polarity after the developing station.

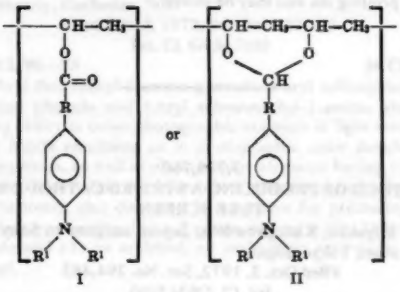
3,779,750

ELECTROPHOTOGRAPHIC ELEMENT WITH A PHOTOCONDUCTIVE COPOLYMER

Stewart H. Merrill, and Thomas B. Brantly, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,037
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **14 Claims**

Novel polymeric photoconductors are described which have as a repeating unit thereof a moiety having formula I or II shown below:



I or II

wherein R^1 is an aromatic radical and R is an alkylene group having 0 or more carbon atoms. Photoconductive homopolymers and copolymers are described.

3,779,751

LIQUID CRYSTALLINE COMPOSITIONS

Werner E. L. Haas; John B. Flannery, Jr., both of Webster; Bela Mechlowitz, Rochester, and James E. Adams, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 13, 1971, Ser. No. 180,019
Int. Cl. G03g *5/00*; **G01n** *31/00*; **G02f** *1/78*
U.S. Cl. 96—1 E **10 Claims**

Liquid crystalline compositions having a cholesteric mesophase are disclosed. The compositions have extended mesomorphic ranges and are stable at relatively low temperatures. Uses of the novel compositions in various electro-optic applications are also disclosed.

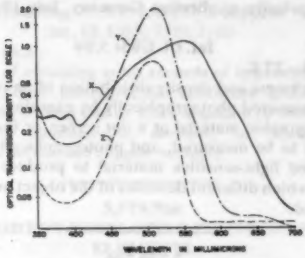
3,779,752

PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING BENZINDOLE PHTHALEINS AS OPTICAL FILTER AGENTS

Stanley M. Bloom, Waban, and Paulina P. Garcia, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 30, 1971, Ser. No. 176,053
Int. Cl. G03c *1/84*, *5/54*, *7/00*
U.S. Cl. 96—3 **45 Claims**

This invention relates to a class of phthalein indicator dyes useful as optical filter agents in photographic processes to protect a selectively exposed photosensitive material from further exposure during processing in the presence of incident light.



Such dyes comprise 3,3-disubstituted phthalides and 3,3-disubstituted naphthalides wherein the 3,3 substituents are benzindole radicals.

3,779,753

PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING AMINOMETHYL-SUBSTITUTED PHENOLIC PHTHALEINS AS OPTICAL FILTER AGENTS

Stanley M. Bloom, Waban; Elbert M. Idelson, Newton Lower Falls; Myron S. Simon, West Newton, and David P. Waller, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 2, 1971, Ser. No. 177,497
Int. Cl. G03c *5/54*, *7/00*, *1/84*
U.S. Cl. 96—3 **105 Claims**

This invention relates to a class of phthalein indicator dyes useful as optical filter agents in photographic processes to protect a selectively exposed photosensitive material from further exposure during processing in the presence of incident light. Such dyes comprise 3,3-disubstituted phthalides and 3,3-disubstituted naphthalides wherein the 3,3 substituents are p-hydroxy carbocyclic aryl radicals wherein one or both of the radicals possess a $-CH_2-NRR'$ group ortho to the p-hydroxy group and the $-CH_2-NRR'$ group(s) is capable of rendering the indicator dye substantially non-diffusible in aqueous solution.

3,779,754

PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING 5-HYDROXY-4-AZAPHENANTHRENYL PHTHALEINS AS OPTICAL FILTER AGENTS

Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 2, 1971, Ser. No. 177,513
Int. Cl. G03c *1/84*, *5/54*, *7/00*
U.S. Cl. 96—3 **45 Claims**

This invention relates to a class of phthalein indicator dyes useful as optical filter agents in photographic processes to protect a selectively exposed photosensitive material from further exposure during processing in the presence of indicident light. Such dyes comprise 3,3-disubstituted phthalides and 3,3-disubstituted naphthalides wherein the 3,3 substituents are para-hydroxy polycyclic aryl radicals possessing a nitrogen atom included in the ring system adjacent to the para-hydroxy group.

3,779,755

PHOTOGRAPHIC PROCESS

Erwin Ranz; Heinz-Dieter Schutz; Hans Schellenberger, and Harald Von Rintelen, all of Leverkusen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 14, 1971, Ser. No. 162,415

Claims priority, application Germany, July 18, 1970, P 20 35 798.6

Int. Cl. G03c *5/04*

U.S. Cl. 96—27 E **7 Claims**

The brighness and density distribution of an object can be digitally measured photographically by exposing a light-sensitive photographic material at a dot screen or the like and to the object to be measured, and photographically processing the exposed light-sensitive material to produce equidensity images in which different densities of the object are differently represented.

3,779,756

COLOR DEVELOPER SCAVENGER LAYER FOR DIFFUSION TRANSFER DYE IMAGE-RECEIVING ELEMENTS AND SYSTEMS

Charles F. Farran, Rochester, and Eugene F. Wolfarth, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 9, 1970, Ser. No. 88,215

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 D **22 Claims**

A color developer scavenger layer comprising a photosensitive silver halide emulsion layer containing a nondiffusible coupler which is capable of forming an immobile product upon reaction with oxidized color developer is useful for reducing background stain in a dye image-receiving element of a color diffusion transfer system utilizing immobile couplers which form diffusible dyes. Various timing mechanisms are described for making the scavenger layer operative only after substantial development of the photosensitive element.

3,779,757

SILVER COMPLEX DIFFUSION TRANSFER PROCESS UTILIZING AN AROMATIC DISULFIDE

Emiel Alexander Hofman, Mortsel, and Robert Joseph Pollet, Vremde, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Jan. 11, 1972, Ser. No. 216,964

Claims priority, application Great Britain, Jan. 12, 1971, 1,508/71

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 R **8 Claims**

A method of stabilizing the image-tone of silver images formed according to the silver complex diffusion transfer process is described, which comprises either carrying out the diffusion transfer process in the presence of an aliphatic, aromatic or heterocyclic disulphide having at least one water-solubilizing group in acid or salt form or treating the image-receiving element subsequent to the formation therein of the silver complex diffusion transfer image with a solution of the said disulphide.

3,779,758

PHOTOSENSITIVE PROCESS FOR PRODUCING PRINTED CIRCUITS EMPLOYING ELECTROLESS DEPOSITION

Joseph Polichette, South Farmingdale, N.Y., assignor to Photocircuits Corporation, Glen Cove, N.Y.

Filed Mar. 25, 1969, Ser. No. 810,378

Int. Cl. G03c *5/00, 5/18*

U.S. Cl. 96—36.2 **9 Claims**

An adhesive system which provides adhesive compositions to be applied to an insulating base and form printed images thereon. The adhesive compositions include agents which render them photosensitive, and receptive to electroless metals.

3,779,759

LITHOGRAPHIC PRINTING PLATES WITH LACQUER OF RESOLE-EPOXY RESIN COMBINATION

Leslie Edward Lawson, and Peter John Smith, both of Orpington, England, assignors to Howson-Algraphy Limited, Kent, England

Filed Aug. 17, 1971, Ser. No. 172,602

Claims priority, application Great Britain, Aug. 19, 1970, 40,015/70

Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **12 Claims**

A lacquer for lithographic printing plate production comprises a resinous material dissolved in an organic solvent. The resinous material comprises at least equivalent proportions of a resol resin and an epoxy resin and additional resol resin. The resol resin and the epoxy resin may be present as a mixture or they may be precondensed together. The lacquer readily accepts printing ink and may be stoved.

3,779,760

METHOD OF PRODUCING A STRIPED CATHODE RAY TUBE SCREEN

Senri Miyaoka, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 2, 1972, Ser. No. 294,483

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.1 **7 Claims**

A photographic method of forming light-absorbing stripes on a color cathode ray tube screen between light-emitting phosphor stripes by an optical shadowing technique in which the light-absorbing stripes are wider than the opaque parts of the shadow mask used to create the optical image. In order to create wider shadows, one set of exposures of the photosensitized screen is made from one set of positions of the light sources, and photographic and deposition steps are carried out to produce a first set of light-absorbing stripes. One edge of each stripe is in the desired location. The exposure process is repeated with the light sources slightly displaced so that, upon further development and deposition steps, a second set of light-absorbing stripes is produced that overlaps the first set so that the width of each stripe is correct and both edges are properly located. The space for light emission between adjacent stripes is therefore narrower than the beams that can strike these stripes by passing through the openings in the shadow mask.

3,779,761

PRESENSITIZED LIGHT-SENSITIVE LETTERPRESS PRINTING MAKEREADY

Daniel S. Dustin, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 218,238, Jan. 17, 1972, Pat. No. 3,703,362. This application Sept. 28, 1972, Ser. No. 292,863

Int. Cl. G03c *5/00, 11/00*

U.S. Cl. 96—38.2 **8 Claims**

Novel presensitized light-sensitive makeready sheet material for letterpress printing is provided. This sheet material is comprised of a flexible backing overlaid in ascending order with a thermoexpansible layer and a pigmented light-sensitive system. The system can include negative-acting or positive acting light-sensitive materials.

3,779,762

N-SUCCINIMIDE ADDITIVES FOR AZIDE IMAGING SYSTEMS

Hiei Ando, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 147,111, May 26, 1971, Pat. No. 3,716,367. This application Nov. 3, 1972, Ser. No. 303,575
Int. Cl. G03c 5/24
U.S. Cl. 96—48 R 4 Claims

Dry photoimaging processes and compositions employing 1,8-diazidonaphthalene and certain N-substituted succinimide additives in a permeable film-forming plastic are disclosed.

3,779,763

PHENOL COLOR COUPLERS

Philip T. S. Lau, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,375
Int. Cl. G03c 7/00
U.S. Cl. 96—55 36 Claims

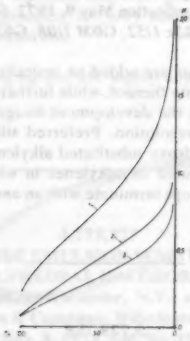
5-Aryl thiomethyl-2-amino phenols, 5-aryl sulfonylmethyl-2-amino phenols and 5-aryl selenomethyl-2-amino phenols having utility as color photographic couplers in light sensitive silver halide emulsions or in photographic color developing compositions, as well as photographic elements having coated thereon silver halide emulsion layers containing such couplers are disclosed; also disclosed is a process for producing the couplers by reacting (1) a 2-amino phenol with (2) formaldehyde and (3) an arylthiol, an arylsulfinic acid or an arylselenol.

3,779,764

SILVER HALIDE EMULSIONS FOR THE PRODUCTION OF REVERSAL COLORPHOTOGRAPHIC IMAGES

Franz Moll; Bernard Morcher, both of Koeln-Stammheim; Erich Reckziegel, Leverkusen, and Wilheim Saleck, Schildgen-Bergisch-Gladbach, all of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Continuation of Ser. No. 781,832, Dec. 6, 1968, abandoned. This application Nov. 10, 1971, Ser. No. 197,480
Claims priority, application Germany, Dec. 6, 1968, P 15 97 506.1
Int. Cl. G03c 5/50
U.S. Cl. 96—59 2 Claims



A silver halide emulsion mixture for the preparation of colorphotographic reversal images by the imagewise exposure and color development of red- green- and blue sensitive emulsion layers in at least one of which the emulsion is a mixture of a relatively highly sensitive silver halide and a relatively less sensitive silver halide emulsion wherein the less sensitive silver halide emulsion has an average grain size at least 50 percent of the average grain size of the more highly sensitive emulsion.

3,779,765

SILVER HALIDE EMULSIONS CONTAINING COUPLER SOLVENTS

Fred C. McCrossen, and Harland J. Osborn, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,288
Int. Cl. G03c 7/00, 1/40
U.S. Cl. 96—56.5 29 Claims

A method of obtaining color records of improved heat stability, also novel photographic emulsions and elements characterized by using one or more aliphatic or trimellitic- or trimethyl 1,3 pentane-diol diesters, or corresponding polyesters, as permanent coupler solvents.

3,779,766

METHOD FOR DEVELOPING PHOTOGRAPHIC ELEMENTS

Nobuo Tsuji; Tatsuya Tajima; Takushi Miyazako; Yoshinori Tsuchiya, and Fumihiko Nishio, all of 210 Nakanuma, Minami-Ashigara-machi, Ashigara-Kamigun, Japan

Division of Ser. No. 838,812, July 3, 1969, Pat. No. 3,666,470. This application Feb. 25, 1971, Ser. No. 118,990
Claims priority, application Japan, July 4, 1968, 43/46708
Int. Cl. G03c 1/92, 5/26
U.S. Cl. 96—63 11 Claims

There is disclosed a method for developing a photographic element which comprises developing a photographic element having photographic layers in a developer containing a water-soluble fluorescent whitening agent, wherein at least one of said photographic layers contains a particular water-soluble polymer or copolymer. In addition, the instant invention also extends to the photographic printing element employed in the method recited above.

3,779,767

COLOR PHOTOGRAPHIC DEVELOPING METHOD AND DEVELOPER THEREFOR

Fumio Hasegawa; Takeo Emoto, and Satoshi Kurihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 18, 1972, Ser. No. 281,673
Claims priority, application Japan, Aug. 20, 1971, 46/63432
Int. Cl. G03c 5/30, 7/16
U.S. Cl. 96—66 R 6 Claims

In a color photographic developing method of silver halide color photographic materials by developing said materials with a developer solution containing 4-amino-3-methyl-N-ethyl-N-(β-methanesulfonamidoethyl)aniline sesquisulfate monohydrate as a developing agent, the crystallization of the developing agent in the developer solution is prevented by incorporating at least one crystallization preventing agent selected from the group consisting of lactose and hydroxypropylmethyl cellulose into the developer solution.

3,779,768

FLUOROCARBON SURFACTANTS FOR VESICULAR FILMS

Oswald James Cope, Santa Cruz, and Saul W. Chaikin, Menlo Park, both of Calif., assignors to Xidex Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 55,976, July 17, 1970, abandoned. This application Aug. 26, 1971, Ser. No. 175,348
Int. Cl. G03c 1/52; G03f 7/08; G03c 1/76
U.S. Cl. 96—75 11 Claims

Fluorocarbon surfactants are added to vesicular films to improve the sensitivity thereof, while further maintaining very small vesicle size in the development image which results in films of improved resolution. The fluorocarbon surfactants contain a hydrophobic chain, which terminates in a hydrophilic head portion, which can be any of the types usually employed with hydrocarbon type dispersing agents.

3,779,769

SILVER HALIDE EMULSION CONTAINING A STABILIZING COMBINATION OF A 4-HYDROXY TETRAZAINDENE AND A MONO-BASICALLY SULFATED VINYL COPOLYMER

Edward P. Abel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,195
Int. Cl. G03c *1/28, 1/34, 1/48*
U.S. Cl. 96—76 R 15 Claims

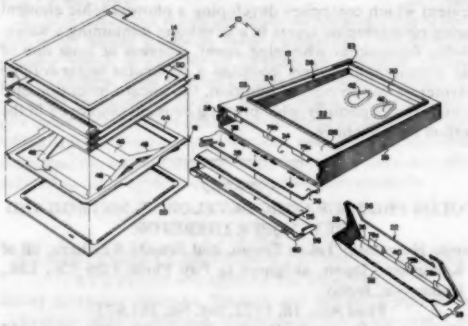
Photographic silver halide emulsions containing speed addenda may be stabilized by a fog-inhibiting combination comprising an azaindene and a monobasically sulfated vinyl copolymer.

3,779,770

PHOTOGRAPHIC FILM ASSEMBLAGE FOR A DIFFUSION TRANSFER FILM

William W. Alston, Somerville; John J. Driscoll, Andover, and Richard R. Wareham, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,701
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C 26 Claims



A photographic film assemblage including a container, a plurality of self-developing film units within the container which are adapted to be sequentially exposed and treated with a liquid processing composition, and members associated with the container so as to form an integral part of the assemblage for controlling the distribution of the liquid processing composition during treatment of a film unit. A photographic apparatus with which the film assemblage is adapted to be used includes structure for locating the distribution control members in operative association with a film unit located in position for exposure and subsequent treatment with the liquid processing composition.

3,779,771

SILVER HALIDE PHOTOGRAPHIC ELEMENTS CONTAINING REMOVABLE ANTIHILATION LAYER

Kenneth G. Gatzke, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 14, 1972, Ser. No. 218,022
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 10 Claims

A silver halide photographic element which comprises a polyester support bearing on one surface thereof an antihalation layer which includes a continuous, compatible, solid mixture of anionic polymers including one polymer having a melting point below about 30° C, finely divided conductive carbon, and a particulate phase of a hard, water-insoluble wax.

3,779,772

METHOD OF MAKING EXPANDED FOOD PRODUCTS

John H. Forkner, 2116 Mayfair Dr. West, Fresno, Calif.

Continuation-in-part of Ser. No. 178,381, Sept. 7, 1971. This application Apr. 28, 1972, Ser. No. 248,748
Int. Cl. A23g *3/00*
U.S. Cl. 99—86 5 Claims

Method for the manufacture of expanded confection products in which the confection material before expansion is made into the form of an aggregate of granules that are fused or bonded together to form a slug or wafer. This slug or wafer is heated to a plastic state and subsequently cooled. After cooling, the product is placed in contact with a mass of cooked dough, heated to soften the same followed by expanding with the aid of a partial vacuum.

3,779,773

STATIC CHARGE-PREVENTED PHOTOGRAPHIC LIGHT SENSITIVE ELEMENT

Takayuki Inayama; Wataru Ueno, and Nobuo Tsuji, all of 210 Nakanuma, Minami Ashigara-Machi, Ashigara Kamigun, Kanagawa, Japan

Filed Feb. 8, 1972, Ser. No. 224,598
Claims priority, application Japan, Feb. 8, 1971, 46/5062
Int. Cl. G03c *1/82*
U.S. Cl. 96—87 A 11 Claims

A static charge-prevented photographic light sensitive element using an antistatic agent in combination with a dichlorophenylphenylsulfone. The combination can reduce the surface resistivity very more than in the case where the antistatic agent is used alone.

3,779,774

SILICONE SURFACTANTS FOR VESICULAR FILMS

Oswald James Cope, Santa Cruz, and Saul W. Chaikin, Menlo Park, both of Calif., assignors to Xidex Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 54,011, July 10, 1970, abandoned. This application May 9, 1972, Ser. No. 251,826
Int. Cl. G03c *1/52*; G03f *7/08*; G03c *1/76*
U.S. Cl. 96—87 R 19 Claims

Silicone surfactants are added to vesicular film vehicles to improve the sensitivity thereof, while further maintaining very small vesicle size in the development image which results in films of improved resolution. Preferred silicone surfactants are polysiloxane-hydroxy substituted alkylenes and polysiloxane-hydroxy substituted oxyalkylenes in which the alkylene and oxyalkylene groups terminate with an amine function.

3,779,775

LIGHT-SENSITIVE MATERIALS

Toshio Chiba; Teruhiko Yonezawa; Jiro Kobayashi, and Goro Akashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 25, 1970, Ser. No. 92,878
Claims priority, application Japan, Nov. 26, 1969, 44-94928
Int. Cl. G03c *1/74, 1/52, 1/72*
U.S. Cl. 96—88 9 Claims

A light-sensitive material comprising a support having thereon a porous plastic layer, with a light-sensitive substance and a binder present in the pores of said layer, is disclosed.

3,779,776

FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING A COLOR COUPLER AND A HETEROCYCLIC MERCAPTAN DESENSITIZER

Willy Joseph Vanassche, Aartselaar; Robert Joseph Pollet, Vremde; Hendrik Alfons Borginon, Mortsel, and Herman Alberik Pattyn, Kapellen, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

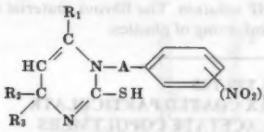
Filed July 7, 1972, Ser. No. 269,861

Claims priority, application Great Britain, July 30, 1971, 36017/71

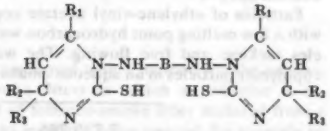
Int. Cl. G03c 7/00, 1/36, 1/28, 1/40

U.S. Cl. 96—55 14 Claims

A direct-positive photographic color element is described wherein the fogged silver halide emulsion comprises a color coupler and a desensitizing agent or precursor of such desensitizing agent wherein said desensitizing agent has one of the following general formulae, a tautomeric form thereof or is a corresponding disulphide :



and



wherein:

R_1 is hydroxyl or C_1–C_5 alkyl,

R_2 is hydrogen or C_1–C_5 alkyl,

R_3 is C_1–C_5 alkyl or aryl,

A is a single bond or NH,

B is a phenyl or diphenyl sulphone group in which the or both phenyl group(s) is (are) substituted with one or more nitro groups, and

n is 1, 2, or 3.

The desensitizing agents are highly compatible with color couplers.

3,779,777

SILVER HALIDE EMULSION SENSITIZED WITH A POLYHEDRAL HALOBORANE

John Howard Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 9, 1971, Ser. No. 197,166

Int. Cl. G03c 1/28

U.S. Cl. 96—107 10 Claims

Photographic silver halide, negative-working developing-out emulsions are prepared which have their sensitivity increased by the addition during the precipitation of the silver halides, of at least one polyhedral haloborane containing 10 or 12 boron atoms, or a derivative thereof, which may contain heteroskeletal atoms such as carbon, nitrogen and sulfur and in which at least some or all of the hydrogen atoms normally attached to the boron atoms have been replaced with halogen atoms, e.g., chlorine, bromine or iodine.

3,779,778

PHOTOSOLUBILIZABLE COMPOSITIONS AND ELEMENTS

George H. Smith, Saint Paul, and James A. Bonham, Pine Springs, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1972, Ser. No. 224,918

Int. Cl. G03c 1/68

U.S. Cl. 96—115 R 25 Claims

Novel photosolubilizable compositions and their preparation are described. These compositions comprise (1) a water-insoluble compound containing one or more acid-degradable groups, and (2) a photoinitiator comprising a photolyzable acid progenitor. Presensitized elements utilizing these photosolubilizable compositions are also provided.

3,779,779

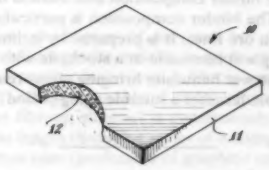
RADIATION ETCHABLE PLATE

Robert M. Landsman, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 20, 1971, Ser. No. 145,315

Int. Cl. G03c 5/00

U.S. Cl. 96—36.3 9 Claims



A plate blank adapted to be selectively etched by radiant energy to form a desired relief pattern thereon for forming a relief printing plate or for decorative or artistic purposes consists of a sheet of thermoplastic material having voids therein that collapses within its own volume when heated to its softening temperature by applying a particular type of radiant energy, such as infrared radiation. A template of the desired pattern, made of material which reflects the type of radiant energy to be applied for collapsing the sheet material, is placed or formed on the surface of the sheet. The radiant energy thereafter heats and collapses the exposed areas of the sheet but is reflected from the areas that are shielded by the reflective template patterns which are therefore left in relief.

3,779,780

WRITING INK CONTAINING NONANOIC ACID

John J. Dyson, Janesville, Wis., assignor to The Parker Pen Company, Janesville, Wis.

Filed June 7, 1971, Ser. No. 150,783

Int. Cl. C09d 11/00, 11/02, 11/16

U.S. Cl. 106—27 7 Claims

A thin writing ink having a viscosity not exceeding 50 centipoises at 25° C. comprising a dispersion of a pigment in a molecular associated liquid vehicle wherein the total solids in said ink are between about 0.05% and 35% by weight.

3,779,781

COPPER ALUMINOSILICATE GLASS COMPOSITIONS

Nils Tryggve E. A. Baak, Princeton, N.J., and Charles F. Rapp, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 552,992, May 25, 1966, abandoned, which is a continuation-in-part of Ser. No. 465,381, June 21, 1965, abandoned. This application Nov. 12, 1970, Ser. No. 88,971

Int. Cl. C03c *3/04, 3/06, 3/08*

U.S. Cl. 106—52 38 Claims

Copper aluminosilicate glass compositions are disclosed possessing desirable properties including low coefficients of thermal expansion, relatively low melting temperatures, good resistance to thermal shock, good characteristics and good chemical durability. The glass compositions are based on the copper aluminosilicate glass system containing as the essential ingredients from 1.5 to 35 mole percent copper oxide, together with from 0.5 to 30 mole percent alumina and 50 to 94 mole percent silica. The remaining balance consists of other compatible ingredients used in glass making. Ternary compositions of copper oxide, alumina and silica contain at least 60 mole percent silica.

3,779,782

BENTONITE BINDER COMPOSITION

Donald V. Erickson, Virginia, and Eugene L. Palusky, Eveleth, both of Minn., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 20, 1971, Ser. No. 145,575

Int. Cl. C04b *33/12*

U.S. Cl. 106—72 6 Claims

A bentonite binder composition and method of preparation is disclosed. The binder composition is particularly useful for pelletizing iron ore fines. It is prepared by intimately combining and mixing wet bentonite in a stockpile with soda ash, the moisture in the wet bentonite bringing about reaction to form an improved binder after a suitable aging period.

3,779,783

MELTABLE COATING COMPOSITIONS, PARTICULARLY FOR FOODSTUFFS AND PHARMACEUTICAL PREPARATIONS

Heinrich Bunger, and Gustav Renckhoff, both of Witten-Bommern, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed June 18, 1971, Ser. No. 154,623

Claims priority, application Germany, Dec. 30, 1970, P 20 64 373.6; June 20, 1970, P 20 30 429.4

Int. Cl. C08b

U.S. Cl. 106—171 13 Claims

A coating composition especially suitable for foodstuffs and pharmaceutical preparations which comprises an acylated glyceride having an iodine value below 12 admixed in certain proportions with a cellulose propionate having an acetyl content less than about 6% by weight, a hydroxyl content less than about 3.0% by weight and a content of acyl groups having more than 3 carbon atoms of less than about 10% by weight.

3,779,784

COMPOSITE FIBERS OF ALKALI METAL HEXATITANATE AND RUTILE TiO_2

Robert Steele Emslie, deceased, late of Chadds Ford, Pa. (by Jean McPhaul Emslie, administratrix), assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1972, Ser. No. 241,681

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 1 Claim

A fibrous material is provided which is composed of composite fibers having a number average diameter of up to about 10 microns and an average length/diameter ratio of at least about 5/1. The fibers have a core of alkali metal hexatitanate

encapsulated by a shell of rutile TiO_2 and are essentially inert to aqueous 5% by weight HF solution. The fibrous material is particularly useful in the reinforcing of plastics.

3,779,785

FREE FLOWING WAX COATED PARTICULATE ETHYLENE-VINYL ACETATE COPOLYMERS

Claude J. Stiles, Tuscola, and Joseph Fischer, Urbana, both of Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed May 26, 1971, Ser. No. 147,252

Int. Cl. B44d *1/02*

U.S. Cl. 117—4 8 Claims

Particles of ethylene-vinyl acetate copolymers are coated with a low melting point hydrocarbon wax to render the particles tackless and free flowing. The wax is applied to the copolymer particles in an aqueous emulsion.

3,779,786

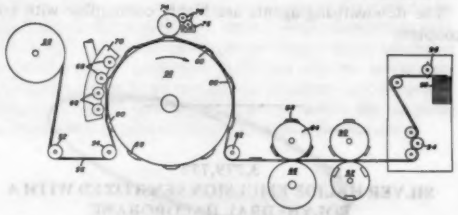
METHOD FOR MANUFACTURING APERTURE CARDS

Frederick F. Tone, Halley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 60,490, Aug. 3, 1970. This application Jan. 14, 1972, Ser. No. 217,880

Int. Cl. B44c *1/24*; G09f *1/10*

U.S. Cl. 117—4 8 Claims



A method of producing an aperture record card from a substantially continuous web of cardstock of predetermined thickness, each of the record cards having a shouldered aperture arranged to receive a film chip over the aperture. The method comprises the combination of the steps of supplying a substantially continuous web of the cardstock and conveying the web along a predetermined path. The web is embossed as it is moved along the path, for example about a rotating embossing drum, to raise a portion thereof above the surface of the surrounding web, with the center portion higher than the peripheral portion of the web. The web is then ground to form a rectangular ground area on the raised surface of the web and

a layer of a fluid-impermeable material, such as molten thermoplastic, is applied to the ground area of the web to seal and protect the surface of the web. The ground area is de-embossed and an aperture is formed through the web in the ground area.

3,779,787

METHOD FOR PRODUCING TOBACCO-SMOKE FILTERS

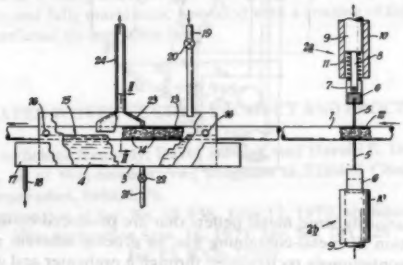
Fred Haslam; Henry George Horsewell, and Paul Henry Gannaway, all of Hampshire, England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 17, 1971, Ser. No. 181,353

Claims priority, application Great Britain, Oct. 7, 1970, 47,706/70

Int. Cl. B44d *1/32*

U.S. Cl. 117—11 **4 Claims**



The invention is concerned with a method for the production of tobacco-smoke filters in which an additive is introduced into a rod of tobacco-smoke filter material from a liquid additive bath by means of holes pierced, for example by needles, in the said rod and creating a pressure differential between the rod and bath whereby the additive is drawn into the rod through the holes. The filter material may be an extruded open-cell foam material, such as polyethylene or polypropylene material. The pierced rod may be passed through a bath of the additive in such a manner that the additive is taken into the rod through the holes.

3,779,788

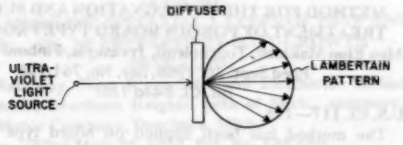
TRANSMITTING AND REFLECTING DIFFUSER

Lloyd S. Keafer, Jr., Yorktown; Ernest E. Burcher, and Leonard P. Kopia, both of Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 38,816, May 19, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,803

Int. Cl. C23c *13/04;* **C03c** *3/06*

U.S. Cl. 117—33.3 **4 Claims**



An ultraviolet grade fused silica substrate is coated with vaporized fused silica. The coating thickness is controlled, one thickness causing ultraviolet light to diffuse and another thickness causing ultraviolet light to reflect a near Lambertian pattern.

3,779,789

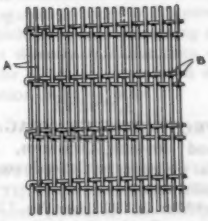
PRODUCTION OF PERVIOUS LOW DENSITY CARBON FIBER REINFORCED COMPOSITE ARTICLES

Im Keun Park, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 20, 1971, Ser. No. 135,698

Int. Cl. B44d *1/092*

U.S. Cl. 117—46 CB **9 Claims**



The efficient production of pervious low density carbon fiber reinforced composite articles is made possible through the use of the present invention. A fibrous open weave tape (as described) which is capable of undergoing conversion to a carbonaceous fibrous material is continuously passed in the direction of its length through a series of heating zones to form a fibrous carbon tape (preferably of graphitic carbon) wherein an open weave construction is maintained. At least one layer of the resulting fibrous open weave carbon tape may be impregnated with a thermosetting resinous material, and subsequently cured to form a pervious composite article.

The composite articles of the present invention exhibit a high specific modulus and strength, and are extremely lightweight. The lightweight composite articles may be utilized as structural elements, and are particularly suited for use as a facing sheet of an acoustic sandwich liner which serves as a noise suppression function in jet engines.

3,779,790

METAL PLATING OF SYNTHETIC POLYMERS

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 15,910, March 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 614,541, Feb. 8, 1967, abandoned. This application Dec. 8, 1971, Ser. No. 206,205

Int. Cl. C23c *3/02*

U.S. Cl. 117—47 A **20 Claims**

Synthetic polymers, having a non-macroporous surface, are plated with metals by pretreating the non-macroporous polymer surface with phosphorus in an organic solvent to deposit phosphorus at the polymer surface. The treated surface is then contacted with a metal salt or metal salt complex, to form a metal-phosphorus compound. The resulting surface is then either conductive or is capable of catalyzing the reduction of a metal salt to form a conductive surface. The resulting surfaces are readily electroplated by conventional techniques.

3,779,791

METHOD OF HEATING PAPER

Theodor Ploetz, Hoesel, and Edeltraud Solich, Viersen, both of Germany, assignors to Feldmuhle Anlagen-und Produktionsgesellschaft mit beschrankter Haftung, Duesselforf-Oberkassel, Germany

Continuation-in-part of Ser. No. 837,879, June 30, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 174,987
Claims priority, application Germany, July 5, 1968, P 17 61 775.3
Int. Cl. A61l *13/00*
U.S. Cl. 21—58 4 Claims

Paper and paperboard essentially consisting of cellulosic fibers may be heated to temperatures greatly in excess of 100°C, as during dry sterilization, without becoming brittle or disintegrating, when impregnated with 2 percent to 25 percent of polyethyleneglycol of molecular weight 1,000 to 6,000 or polypropylene glycol. The impregnated paper is sterilized by heating to temperature of at least 180°C for a period of 40 minutes.

3,779,792

METHOD OF PROTECTING GLASS AGAINST FOGGING

Artur Stoy, and Renata Urbanova, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praha, Czechoslovakia

Filed Mar. 8, 1971, Ser. No. 122,225
Claims priority, application Czechoslovakia, Mar. 13, 1970, 1672-70
Int. Cl. C09k *3/18*; B32b *17/10*
U.S. Cl. 117—72 6 Claims

A method of protecting glass from becoming fogged by water or ice from condensed water vapour of the ambient atmosphere. The glass has applied thereto at least on one surface at least one coating comprising a hydrophilic polymeric salt having one ion covalently bonded and the other free. This coating is conveniently applied upon an intermediate base comprising a hydrophobic polymer which has good adhering properties with the glass surface.

3,779,793

SCALE CONTROL

James W. Hughes; Thomas E. Sample, Jr., and Jack F. Tate, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 210,137
Int. Cl. C23f *15/00*; B32b *27/40*
U.S. Cl. 117—72 18 Claims

This invention concerns methods of imparting properties of scale resistance to surfaces upon which adherent scale is normally prone to form during contact with mineralized waters through the use of novel, polyurethane-type resins, characterized by containing pendant polyoxyalkylene chains attached to a basic polyurethane skeletal network wherein the polyurethane is formed utilizing a blocked isocyanate.

3,779,794

POLYURETHANE SEALANT-PRIMER SYSTEM

G. William De Santis, East Brunswick, N.J., assignor to Essex Chemical Corporation, Clifton, N.J.

Division of Ser. No. 16,924, March 5, 1970, Pat. No. 3,707,521. This application Jan. 31, 1972, Ser. No. 222,398
Int. Cl. B32b *27/40*
U.S. Cl. 117—72 2 Claims

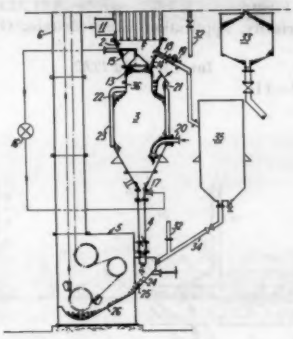
Polyurethane sealant-primer system comprising an isocyanate-reactive surface primer composition and a moisture-curable polyurethane sealant composition; method of making cured polyurethane seals with said system; cured polyurethane seals produced thereby.

3,779,795

DISTRIBUTION OF PELLETS

David Evans, and Alexander Bowen Simpson, both of Swansea, Wales, assignors to The International Nickel Company, Inc, New York, N.Y.

Filed June 23, 1971, Ser. No. 155,869
Claims priority, application Great Britain, July 7, 1970, 32,964/70
Int. Cl. B44d *1/02*; C23c *11/02*
U.S. Cl. 117—100 M 5 Claims



Variously sized metal pellets that are produced by decomposition of metal-containing gas, in process wherein pellets are continuously recirculated through a preheater and a reaction chamber, are preheated uniformly and then radially mixed after issuing from the preheater and before entrance to the reaction chamber.

3,779,796

SODIUM PROPIONATE COATED WITH SORBITAN HIGHER FATTY ACID ESTER AND PROCESS FOR ITS PREPARATION

Ryuzo Ueno, Nishinomiya; Tetsuya Miyazaki, Itami; Shigeo Inamine, Nishinomiya, and Saburo Kishi, Osaka, all of Japan, assignors to Ueno Fine Chemical Industries, Ltd., Osaka, Japan

Filed July 21, 1971, Ser. No. 164,808
Claims priority, application Japan, July 24, 1970, 45/64295
Int. Cl. B44d *1/00*, *5/08*
U.S. Cl. 117—100 A 5 Claims

Non-caking sodium propionate is obtained by coating sodium propionate with a sorbitan higher fatty acid ester such as sorbitan monolaurate. The coating is performed by adding 10–500 ppm by weight of the sorbitan higher fatty acid ester to an aqueous solution of sodium propionate, removing the aqueous medium from the resultant mixture, and drying it. An organic medium may be used instead of the aqueous medium. This coating prevents sodium propionate from caking during storage.

3,779,797

METHOD FOR THE IMPREGNATION AND SURFACE TREATMENT OF POROUS BOARD TYPE PRODUCTS

Alpo Eino Makinen, Touruniemi, Jyvaskyla, Finland

Filed Sept. 20, 1968, Ser. No. 761,128
Int. Cl. B44d *1/02*
U.S. Cl. 117—116 2 Claims

The method has been applied on board type products, which have been subjected to low pressure and effecting impregnation rapidly within a few seconds and polymerisation in hot press during 1 – 5 minutes, the impregnating medium generally consisting of a mixture of unsaturated polyester and styrene monomer. By regulating underpressure and viscosity

and by using fillers the plastic quantity is regulated. The penetration depth of the impregnation medium is further controlled by regulating the temperature of the impregnating medium and the impregnating time. Improved absorption is achieved by vibrating the impregnating medium or the board.

3,779,798

CORROSION RESISTANT TINPLATE

Margaret A. Clinton, Pittsburgh, and Martin G. H. Wells, Bethel Park, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 730,669, April 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 560,315, June 24, 1966, abandoned. This application July 17, 1972, Ser. No. 272,609

Int. Cl. C23c *35/00*

U.S. Cl. 117—131 1 Claim

Tinplate of improved corrosion resistance comprises a steel base with a microstructure between the limits of martensitic-ferritic and fully martensitic provided with a coating of tin and an interfacial tin-iron alloy layer.

3,779,799

COATED WOVEN TEXTILE PRODUCT AND PROCESS THEREFOR

C. Trowbridge Kennedy; David J. Stout, and Harold E. Dodds, Jr., all of Waynesboro, Va., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Continuation of Ser. No. 45,938, June 12, 1970, abandoned. This application Sept. 16, 1971, Ser. No. 181,226

Int. Cl. B32b *27/06*

U.S. Cl. 117—161 UZ 19 Claims

In a primary backing woven from synthetic yarns for tufted fabrics and other products, such as carpet and the like, an enhancement in the carpet and/or tufted fabrics tuft raveling resistance capabilities is obtained when the backing is coated with a polymeric substance which effectively reduces such tuft raveling to an acceptable degree. The preferred coating material is a copolymer of ethylene vinyl acetate, and is applied to the backing by any known method including spraying, immersing, brushing or rolling.

3,779,800

COATINGS CONTAINING PLASTIC PIGMENTS

Edward J. Heiser, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 27, 1968, Ser. No. 732,100

Int. Cl. D21h *1/28;* C08f *33/08*

U.S. Cl. 117—155 UA 2 Claims

A retain weight coating comprising a convenient binder such as starch and small colorless plastic particles which remain discrete and retain a diameter of about one wavelength of visible light. The coating, prepared by dispersing the plastic particles in an aqueous media containing the binder, may then be applied to a paper substrate in a conventional manner.

3,779,801

HIGH MOBILITY EPITAXIAL LAYERS OF PBTE AND $PB_{1-x}SN_xTE$ PREPARED BY POST-GROWTH ANNEALING

Henry Halloway, West Bloomfield, and Eleftherios Miltiadis Logothetis, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 26, 1971, Ser. No. 128,569

Int. Cl. B44c *1/18;* C23c *11/00*

U.S. Cl. 117—201 8 Claims

This invention teaches the preparation of lead tin telluride films when such films are deposited upon a cleaved base of barium fluoride. Barium fluoride supported epitaxial films of lead tin telluride are especially useful as a detector of radiation in the infra red region centered upon the 10 micron (100,000 Angstrom) wave length. Post-growth annealing has been found to give n-type layers of PbTe and $Pb_{1-x}Sn_xTe$ (with $x \approx 0.2$) with much larger low-temperature Hall mobilities than as-grown layers.

3,779,802

PROCESS FOR THE MANUFACTURE OF A WELDING WIRE, AND WELDING WIRE

Dominique Thomas Francois Streel, Ougree, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdoz en abrege "Cockerill", Seraing-lez-Liege, Belgium

Filed June 17, 1971, Ser. No. 153,952

Claims priority, application Belgium, June 24, 1970, 42,869

Int. Cl. B23k *35/00;* C23g *1/00*

U.S. Cl. 117—207 4 Claims

A process for the manufacture of a welding wire having a core of base welding steel provided with a covering of an additional element, which comprises depositing a coating of said additional element directly onto the core of base welding steel. Preferably the additional element is deposited by the method of evaporation under vacuum.

3,779,803

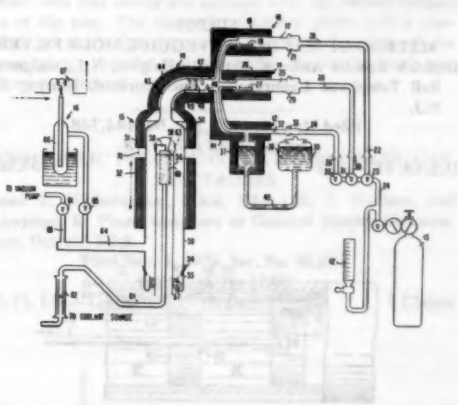
INFRARED SENSITIVE SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE

Robert E. Lee, Essex Junction, Vt.; Philip S. McDermott, Athens, Pa., and Edward S. Pan, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 877,312, Nov. 17, 1969, Pat. No. 3,642,529. This application Nov. 22, 1971, Ser. No. 201,224

Int. Cl. H01l *7/36;* B44d *1/18*

U.S. Cl. 117—211 4 Claims



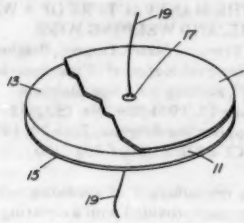
An infrared sensitive photoconductive material is produced by growing a ternary compound of the formulation $Hg_{(1-x)}Cd_xTe$ from a gaseous mixture of mercury, cadmium and tellurium onto a substrate which promotes polycrystalline growth and is chemically inert vis-a-vis the constituent gases. Suitable substrate materials are quartz, sapphire, and certain types of glass which are non-meltable at growth temperatures of the ternary compound. The method preferably grows the polycrystalline material from a gaseous mixture of mercury, cadmium and tellurium heated to a temperature which inhibits binary combinations and then is rapidly cooled to supersaturation very close to the surface of a solid amorphous substrate material although crystalline substrates may be used provided the lattice structure in growth is incompatible with the lattice of the ternary compound.

3,779,804

ELECTRODES FOR CERAMIC BODIES

Stephen F. Urban, Erie, N.Y., assignor to National Lead Company, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,632
Int. Cl. B44d 1/18; C23b 5/64
U.S. Cl. 117—212 7 Claims



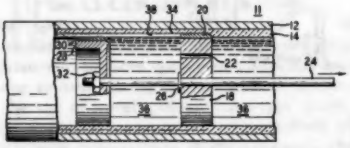
Inexpensive, solderable ohmic electrodes are produced on a semiconductive ceramic body by applying to each of the opposite faces of said body a coating of a liquid composition which consists of the reaction product of fine aluminum powder and an aqueous vehicle which contains a phosphate-chromate reaction product, drying said coatings and maturing them by heating said body in air to a temperature from about 590° to 950° C and thereafter applying, to at least a portion of the areas coated by said matured composition, a silver electrode paste and refiring said body at a lower temperature.

3,779,805

METHOD OF MAKING WAVEGUIDE MODE FILTER

Dietrich Anselm Alsberg, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1971, Ser. No. 144,748
Int. Cl. B44d 1/02, 1/18
U.S. Cl. 117—212 13 Claims



A waveguide mode filter comprising a dielectric-lined waveguide having a series of electrically lossy vanes in the lining parallel to the waveguide axis dissipates longitudinal and radial current components produced by unwanted modes and thereby suppresses such modes. A method of forming the vanes includes the steps of flooding the dielectric-lined waveguide interior with a solution containing lossy particles, drawing a cutting head through the waveguide to slice the dielectric lining so that the solution flows into the incisions and is trapped therein, and drawing a wiper through the waveguide to remove the excess solution.

3,779,806

ELECTRON BEAM SENSITIVE POLYMER T-BUTYL METHACRYLATE RESIST

Edward Gipstein; William Ainslie Hewett, both of Saratoga, Calif., and Harold A. Levine, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,875
Int. Cl. B44d 1/18; G03c 1/64
U.S. Cl. 117—212 16 Claims

Patterns, such as etch resistant resists, masks, are formed by degradation of a t-butyl methacrylate polymer coating, or film, under an electron beam in a predetermined pattern, followed by removal with a solvent, of the electron degraded product in the exposed areas.

3,779,807

PROCESS FOR APPLYING MULTIPLE MICROELECTRONIC LAYERS TO SUBSTRATE

Lynn J. Taylor, Haslett, and John D. Grier, Temperance, both of Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 12, 1971, Ser. No. 188,475
Int. Cl. B44d 1/14
U.S. Cl. 117—215 22 Claims

There is disclosed a process for applying multiple microelectronic layers to a substrate which comprises applying at least two different fugitive vehicle systems to a substrate, each system comprising at least one microelectronic material dispersed in a film-forming, pyrolyzable, polymeric binder and a solvent for the binder, each solvent being capable of removal from the substrate at a temperature below the pyrolyzing temperatures of the polymer in its respective system and the polymer in each previously applied system. The polymeric binder of each applied system is insoluble in the polymeric binder and solvent of the subsequently applied system. Each solvent is appropriately vaporized from the substrate so as to form at least two layers of microelectronic material dispersed in a film of binder.

3,779,808

POLYESTER COATED WIRE

Steve G. Cottis, Amherst; Bernard E. Nowak, Lancaster, and James Economy, Buffalo, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 828,652, May 28, 1969, Pat. No. 3,669,738. This application Oct. 7, 1971, Ser. No. 187,339
Int. Cl. B44d 1/42; C09d 3/68
U.S. Cl. 117—232 8 Claims

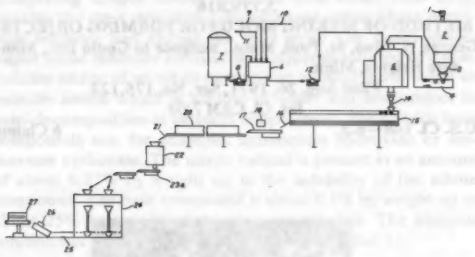
A wire insulated with an impervious oxybenzoyl polyester coating which can be produced by drawing the wire having a porous coating through a die.

3,779,809

METHOD OF PRODUCING FREEZE GROUND BROWN SUGER AND PRODUCT OF SAID METHOD

Marshall Battin, Golden, and Brooks M. Stein, Loveland, both of Colo., assignors to The Great Western Sugar Company, Denver, Colo.

Filed Aug. 20, 1971, Ser. No. 173,412
Int. Cl. C13f 3/00
U.S. Cl. 127—63 11 Claims



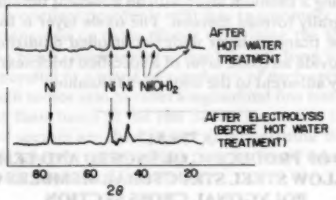
A method of increasing the flowability of brown sugar, which facilitates packaging of such sugar, which involves freezing a brown sugar mix within a range of from −50°C. to −10°C., preferably to about −20°C. to establish a brittle and hard frozen consistency. The hard frozen brown sugar is then subjected to a size reduction action to establish a grain size approximately the same as in the brown sugar before freezing. An end product is attained which has a bulk density of about 41 pounds per cubic foot and has free-flowing properties to facilitate packaging.

3,779,810

METHOD OF MAKING A NICKEL POSITIVE ELECTRODE FOR AN ALKALINE BATTERY

Koji Kanetsuki, Neyagawa; Minoru Yamaga, and Hiromichi Ogawa, both of Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 56,474, July 20, 1970, abandoned.
This application May 18, 1972, Ser. No. 254,411
Int. Cl. H01m 43/04
U.S. Cl. 136—29 7 Claims



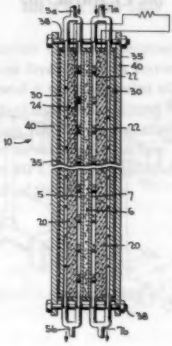
A method of making a nickel positive electrode for use in an alkaline battery by immersing, a porous sintered plaque of nickel in an aqueous solution of a nitrate, nitrite nitro compound, amino compound, ammonate or the like of nickel, cathodically polarizing the nickel plaque so as to cause the continuous deposition of an active material forming substance in the pores of the plaque without the accompanyment of the undesirable generation of hydrogen and then immersing the cathodically polarized nickel plaque in water above 65° C, preferably above 95° C, to convert the active material forming substance into nickel hydroxide and also to convert a part of the metallic nickel constituting the plaque into nickel hydroxide thereby filling the pores of the plaque with the active material within a short period of time with high efficiency.

3,779,811

MATRIX-TYPE FUEL CELL

Calvin L. Bushnell, South Glastonbury, and James K. Stedman, Glastonbury, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 16, 1971, Ser. No. 124,862
Int. Cl. H01m 27/02
U.S. Cl. 136—86 R 10 Claims



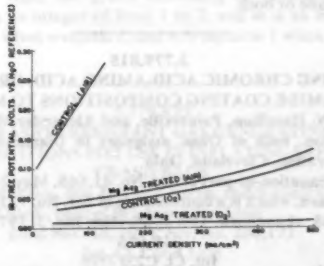
A compact electrochemical cell is described comprising an anode, a cathode, a matrix containing an ion-conductive electrolyte between the anode and cathode, and porous metal plates containing porous pins positioned adjacent each of said anode and cathode in order that the pins of the plates are in contact with said anode and cathode over the limited surface area of the pins. The electrolyte volume of the cell is controlled by electrolyte movement through the pins of the porous plate, thereby stabilizing the electrochemical performance of the cell.

3,779,812

HYDROPHILIC TREATMENT FOR HYDROPHOBIC GAS ELECTRODES

Romeo R. Witherspoon, Utica, Mich.; R. J. Wallace, and Lawrence B. Plant, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1970, Ser. No. 86,058
Int. Cl. H01m 13/08
U.S. Cl. 136—120 FC 8 Claims



Coating and infiltrating hydrophobic-type, gas electrodes with an alcohol-soluble, alkaline earth metal carboxylate and subsequently converting the carboxylate to its corresponding

oxide or hydroxide for subsequent use in alkaline electrolyte gas depolarized cells. The alkaline earth metal oxide/hydroxide impregnated electrode has a plurality of electrolyte wettable paths extending into the otherwise hydrophobic structure which effectively extends the reactive surface area of the electrode without substantially reducing its hydrophobic properties.

3,779,813

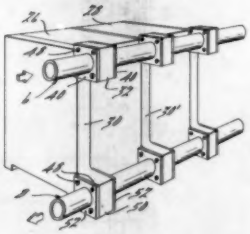
MANIFOLD SYSTEM FOR ELECTRICAL ENERGY STORAGE SYSTEMS

Eugene W. Rabut, Utica, Mich., assignor to Occidental Energy Development Company, Madison Heights, Mich.

Filed Aug. 21, 1972, Ser. No. 282,185

Int. Cl. H01m 7/02

U.S. Cl. 136—161 **6 Claims**



A manifold system for circulating an aqueous electrolyte through a plurality of chambers of a plurality of cells of a secondary electrical energy storage system and which manifold system facilitates an assembly and disassembly of the cells and further assures a substantially uniform distribution of electrolyte to each of the individual cells.

3,779,814

THERMOELECTRIC DEVICES UTILIZING ELECTRICALLY CONDUCTING ORGANIC SALTS

Malcolm G. Miles, Ladue; James D. Wilson, University City, both of Mo., and Morrel H. Cohen, Chicago, Ill., assignors to Monsanto Company, St Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,447

Int. Cl. H01v 1/24

U.S. Cl. 136—236 **10 Claims**

Thermoelectric device such as generators and refrigerators are disclosed having as the N-type semiconductor material compounds or compositions having a cation which is tetrathiafulvalene or 2,5-cyclohexadiene-1,4-diylidene-bis-1,3-thiole or both, and an anion which is 7,7,8,8-tetracyano-p-quinodimethane or 11,11,12,12-tetracyano-2,6-naphthaquinodimethane or both.

3,779,815

APPLYING CHROMIC ACID-AMINO ACID, OR LACTAM, OR AMIDE COATING COMPOSITIONS TO METALS

Donald N. Hamilton, Painesville, and Alexander W. Kennedy, Chardon, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 41,665, May 21, 1970, abandoned, which is a continuation of Ser. No. 721,601, April 16, 1968, abandoned. This application Jan. 3, 1972, Ser. No. 215,085

Int. Cl. C23f 7/26

U.S. Cl. 148—6.2 **3 Claims**

Corrosion-inhibiting, hexavalent-chromium-containing coating compositions for ferruginous metal surfaces are prepared with chromic acid in combination with a compound containing the structure —CONH—, or amino acid, or their mixtures, which are free from sulphur, hydroxyl, or halogen groups. After coating, the compositions are cured on the ferruginous surface at elevated temperature to augment the bonding of the resulting residue to such surface. Subsequently, surfaces containing typically less than 600 milligrams per square foot of the residue exhibit enhanced paint adhesion and, for weldable substrates retain weldability without deleterious effect to the corrosion resistance imparted by the residue.

3,779,816

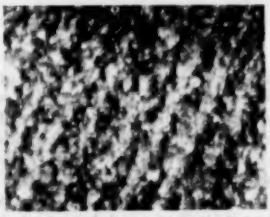
METHOD OF MAKING MOLD FOR FORMING OBJECTS

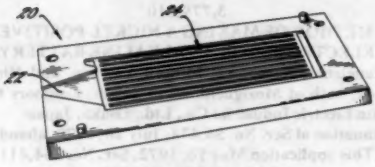
George W. Mao, St. Paul, Minn., assignor to Gould Inc., Mandota Heights, Minn.

Filed Aug. 26, 1971, Ser. No. 175,122

Int. Cl. C23f 7/06

U.S. Cl. 148—6.3 **6 Claims**





A mold for forming objects such as battery grids includes a cavity having a titanium layer with an adherent titanium oxide layer integrally formed thereon. The oxide layer is formed by heating the titanium layer under controlled oxidizing conditions to provide an oxide layer of a specified thickness which is tenaciously adherent to the unoxidized titanium.

3,779,817

METHOD OF PRODUCING QUENCHED AND TEMPERED HOLLOW STEEL STRUCTURAL MEMBERS OF POLYGONAL CROSS SECTION

Wade D. Brunko, Library, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1972, Ser. No. 291,854

Int. Cl. C21d 9/08

U.S. Cl. 148—12.4 **8 Claims**

Method of producing quenched and tempered hollow steel structural members of polygonal cross section includes the steps of hot rolling a hollow steel tube, austenitizing the tube, water quenching it, reheating the tube to a tempering temperature just below the lower critical transformation temperature, and rolling the tube to the desired polygonal cross section while holding the temperature of the member at the tempering temperature.

3,779,818

METHOD FOR PREVENTING THE FORMATION OF RUST ON THE SURFACE OF COILED STEEL STRIP AND AN INHIBITOR FOR ACCOMPLISHING SAME

Carlyle E. Shoemaker, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation of Ser. No. 830,120, June 3, 1969, abandoned. This application Apr. 1, 1971, Ser. No. 130,446

Int. Cl. C23f 7/00

U.S. Cl. 148—6.14 R 15 Claims

Method for preventing the formation of rust on coiled steel comprising temper rolling annealed cold rolled steel strip, coating the steel strip with a liquid phase-vapor phase corrosion inhibitor and coiling the steel strip. The liquid phase-vapor phase inhibitor consists of an aqueous solution of a non-volatile nitrite of an alkali metal or an alkaline earth metal or volatile amine which is soluble in water and not subject to auto-decomposition at ambient temperature. The volatile base compounds are, for example, ammonium hydroxide or ammonium carbonate. The nitrite radical is present in an amount of about 0.07% by weight up to the solubility of the nitrite compound. The base compound is about 0.1% by weight up to about 25% by weight of the aqueous solution. The aqueous solution has a pH of not less than about 8 to about 13.

3,779,819

PROPELLANT POWDER CHARGE HAVING FINNED INTERNAL CONFIGURATION

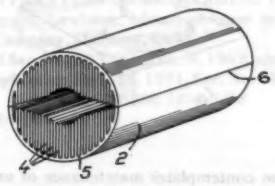
Jean-Pierre Thomas, and Jean Ramond, both of Saint-Medard-en-Jalles, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Dec. 22, 1971, Ser. No. 210,752

Claims priority, application France, Dec. 22, 1970, 7046134

Int. Cl. C06b 3/02

U.S. Cl. 149—2 13 Claims



A method of manufacturing a finned, one-piece propellant powder charge in which an extruded or moulded cylindrical block of propellant powder is split into two or more cylindrical sectors along one or more planes containing the longitudinal axis of the block. Each sector is machined to form longitudinal grooves parallel to a plane of symmetry of each sector so as to divide each sector into parallel longitudinal fins integrally connected at their bases to the rim of the respective sector. The machined sectors are then joined to reconstitute the cylindrical block and the sides of the reconstituted block is then coated with a combustion inhibitor.

3,779,820

PROPELLENT CHARGE COMPRISING NITROCELLULOSE

Robert Reid Stevely, Saltcoats, and William Snodgrass Webster, Beith, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 21, 1972, Ser. No. 282,057

Claims priority, application Great Britain, Sept. 16, 1971, 43,188/71

Int. Cl. C06b 5/00, 5/02

U.S. Cl. 149—2 6 Claims

A dry compacted Caseless Propellant Charge comprising in addition to the usual constituents of a propellant explosive, a proportion of nitrocellulose having an average nitrogen content of 11.0 to 12.0 percent by weight.

3,779,821

PRILLED AMMONIUM NITRATE COMPOSITION OF IMPROVED ANTI-SCATTERING PROPERTIES

Konoshuke Fujiki, Tokyo; Katsuaki Inafuku, Kitakyushu; Hiroshi Shimizu, Kitakyushu; Toshiharu Shigematsu, Kitakyushu, and Kazumi Kumura, Kitakyushu, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

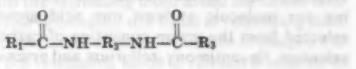
Filed Sept. 15, 1972, Ser. No. 289,729

Claims priority, application Japan, Sept. 27, 1971, 46/75330

Int. Cl. C06b 1/04

U.S. Cl. 149—7 5 Claims

A prilled ammonium nitrate composition having blended with (1) a petroleum hydrocarbon having a boiling point of more than 150°C. and a melting point of less than 20°C. and (2) at least one anti-coagulant selected from (a) magnesium, barium, lead, calcium, zinc, copper, aluminum and cadmium salts of fatty acid of seven to 22 carbon atoms and a melting point of more than 40°C., (b) magnesium aluminate silicate and (c) a compound of the formula:



, and wherein R_1 and R_3 each represent alkyl groups having 10 to 20 carbon atoms and R_2 is an alkylene group having one to two carbon atoms, which composition is characterized by improved anti-caking and anti-scattering properties.

3,779,822

COMPOSITE PROPELLANT CONTAINING ORGANIC AMINE PERCHLORATES

Manfred Stammler, Carmichael; Willfred G. Schmidt, Sacramento, and Rolf S. Bruenner, Orangevale, all of Calif., assignors to Aerojet - General Corporation, Azuse, Calif.

Filed July 22, 1963, Ser. No. 297,179

Int. Cl. C06d 5/06

U.S. Cl. 149—19.4 7 Claims

1. A solid propellant composition comprising from about 5 percent to about 55 percent by weight of an organic cross-linked resin binder and from about 95 percent to about 45 percent by weight of an oxidizing composition comprising a compound having the general formula

$$(R)_m (NH_{4-m}X)_n$$

wherein R is an organic radical having a valence equal to n; X is selected from the group consisting of perchlorate and nitrate; n is an integer of from 1 to 2; and m is an integer of from 1 to 3 when n equals 1, and m is equal to 1 when n equals 2.

3,779,823

ABRASION RESISTANT GAS GENERATING COMPOSITIONS FOR USE IN INFLATING SAFETY CRASH BAGS

Raymond M. Price, 805 E. Third North, and Russell Reed, 508 Highland Blvd., both of Brigham City, Utah

Filed Nov. 18, 1971, Ser. No. 200,172

Int. Cl. C06d 5/06

U.S. Cl. 149—19 33 Claims

An abrasion resistant granular gas generating composition comprising a metallic azide, oxidizers for the azide, and a small amount of a novel cured polymeric binder having a relatively high oxygen content and prepared entirely from solid

binder ingredients having a melting point in the range of 45° C to 130° C. The compositions are resistant to abrasion during long storage periods and when ignited produce predominately non-toxic gases.

3,779,824

SOLID PROPELLANTS

John E. Mahan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 12, 1960, Ser. No. 55,602
Int. Cl. C06d 5/06
U.S. Cl. 149—19.9 19 Claims

A solid propellant composition comprising an oxidant of inorganic oxidizing salt and a binder of solid polymer formed by reacting in combination a compound containing 3 aziridinyl groups per molecule and a compound containing only 2 aziridinyl groups per molecule with an uncured polymer of a monomer selected from the group consisting of conjugated dienes having 4 to 12 carbon atoms per molecule, aryl-substituted olefins, pyridine and quinoline derivatives containing at least one member of the group consisting of vinyl and alphamethylvinyl, acrylic acid esters, alkacrylic acid esters, vinylfuran and vinylcarbazole, said uncured polymer containing per molecule at least one acid group of an element selected from the group consisting of carbon, sulfur, silicon, selenium, tin, antimony, tellurium and arsenic.

3,779,825

SOLID PROPELLANT COMPOSITION

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 4, 1960, Ser. No. 444
Int. Cl. C06d 5/06
U.S. Cl. 149—19 19 Claims

1. A solid propellant composition comprising: from 60 to 90 weight per cent of an oxidizer component selected from the group of solid inorganic oxidizing salts consisting of ammonium perchlorate, the alkali metal perchlorates, ammonium nitrate, the alkali metal nitrates, and mixtures thereof, at least a major portion of said oxidizer component being at least one of said perchlorates; from 10 to 40 weight per cent of a binder component comprised of a rubbery material selected from the group consisting of natural rubber, synthetic rubber polymers, and mixtures thereof; and from 0.1 to 8 weight per cent of a burning rate depressing agent selected from the group consisting of ammonium fluoborate, hydrazine dihydrochloride, barium periodate, and ferric oxalate.

3,779,826

NITROCELLULOSE PROPELLENT COMPOSITIONS CONTAINING INORGANIC OXIDIZING AGENTS WITH ALUMINUM

Robert G. Shaver, Burke, Va., assignor to Atlantic Research Corporation, Fairfax, Va.

Filed Dec. 2, 1960, Ser. No. 73,452
Int. Cl. C06d 5/06
U.S. Cl. 149—20 12 Claims

A double-base propellant is provided having reduced pressure and temperature sensitivity and also increased burning rate by incorporating aluminum of small particle size, e.g., about 3 microns, and a solid inorganic oxidizer salt of coarse particle size, e.g., about 150 microns into the propellant.

3,779,827

PROCESS FOR PRODUCING A FATIGUE RESISTANT TIRE CORD

Harold A. Blinn, Akron, and William T. Overby, Mogadore, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 20, 1971, Ser. No. 210,184
Int. Cl. B29h 9/04; B32b 25/02
U.S. Cl. 156—330 5 Claims

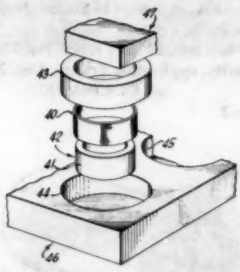
Relates to an improved method for the application of a liquid adhesive to a rubber reinforcing rod to minimize penetration of the adhesive into the interstices of the cord. The cord is passed into the adhesive which is in the form of a foam capable of wetting the surface of the cord. The adhesive is deposited on the surface of the cord. As the bubble structure of the foam collapses, a minimum amount of adhesive is deposited on the surface of the cord and substantially none in the interstices of the cord.

3,779,828

APPARATUS FOR BONDING BEARING LINERS

Gordon J. Clark, Bristol, Conn., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 873,161, Nov. 3, 1969, Pat. No. 3,668,040.
This application July 8, 1971, Ser. No. 160,665
Int. Cl. G05g 15/02
U.S. Cl. 156—358 5 Claims



The invention contemplates maintenance of uniform controlled pressure and temperature at the zone of bonding a fabric or the like liner to a bearing ring or the like, the pressure and temperature being at the levels required for optimum curing of the particular thermosetting material involved. The pressure is developed by axial compression of an elastomeric plug, which is so constrained that radial loading of the lining on the bearing element necessarily results from hydrostatic deformation of the plug. The heat supplied for curing also causes the plug to expand, but the invention provides for automatic compensation for plug expansion so as to maintain substantially constant pressure loading on the liner in the course of a curing cycle. Means are disclosed for the bonding of a plurality of lined bearing elements in a single batch processing cycle.

3,779,829

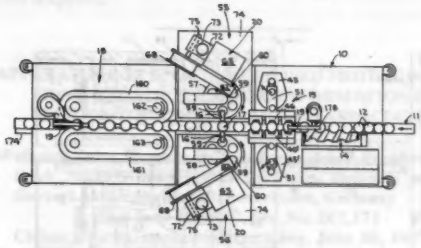
LABELING MACHINE

Edwin K. Wolff, Stockholm, N.J., assignor to NJM, Inc., Hoboken, N.J.

Filed Jan. 24, 1972, Ser. No. 219,986
Int. Cl. B32b 31/00; B65c 9/00
U.S. Cl. 156—361 19 Claims

The labeling machine comprises a pressure sensitive label dispenser for delivering either completely or partially released labels to label applicators on a label applying drum. The labels may be delivered directly to the applicators or to a stationary label holder having two spaced members for engaging spaced

portions of a precisely positioned supported label and between which moves the label applicators. If the labels are delivered to the label holder, the applicators successively strip the precisely registered labels from the holder before carrying them to a label applying station for application to articles



moving along a given path. The applicators are so constructed and so oriented at the label applying station that they will move the labels at the applying station in a path parallel to the path of movement of the articles and at the same speed as the articles, and will apply such labels precisely to given areas of the articles.

3,779,830

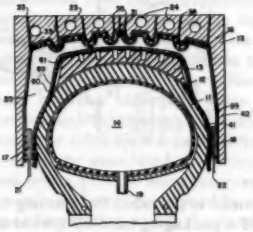
APPARATUS FOR RETREADING TIRES

Willi E. Reppel, Lewiston, Mass., assignor to Oliver Tire & Rubber Company, Oakland, Calif.

Division of Ser. No. 883,161, Dec. 8, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,602

Int. Cl. B29h *5/04, 5/18*

U.S. Cl. 156—394 **9 Claims**



The specification discloses an apparatus and method for adapting a standard tire retreading mold to use the newer continuous precured and premolded tire tread in retreading tires. The apparatus and method also make it possible to adapt a single size standard tire retreading mold to retread a number of different size tires by use of a mold liner and a plurality of variably sized gasket sealing means.

3,779,831

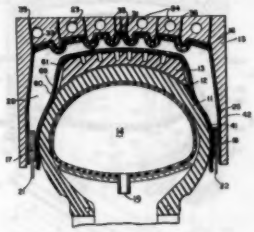
APPARATUS FOR RETREADING TIRES

Willi E. Reppel, Lewiston, Mass., assignor to Oliver Tire & Rubber Company, Oakland, Calif.

Division of Ser. No. 883,161, Dec. 8, 1969. This application Sept. 22, 1971, Ser. No. 182,603

Int. Cl. B29h *5/04, 5/18*

U.S. Cl. 156—394 **8 Claims**



The specification discloses an apparatus and method for adapting a standard tire retreading mold to use the newer continuous precured and premolded tire tread in retreading tires. The apparatus and method also make it possible to adapt a single size standard tire retreading mold to retread a number of different size tires by use of a mold liner and a plurality of variably sized gasket sealing means. The specification also discloses a new and improved tire retreading mold having two flat disks and an annular ring.

3,779,832

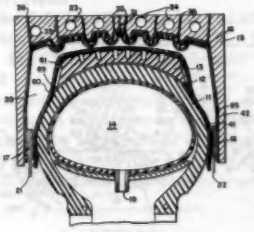
METHOD FOR RETREADING TIRES

Willi E. Reppel, Lewiston, Maine, assignor to Oliver Tire & Rubber Company, Oakland, Calif.

Division of Ser. No. 883,161, Dec. 8, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,814

Int. Cl. B29h *5/04, 5/18*

U.S. Cl. 156—96 **14 Claims**

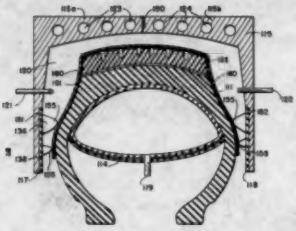


The specification discloses a method for retreading tires with continuous precured and premolded tread strips. A method of adapting a standard tire retreading mold to use the precured tread strip is also disclosed. The method makes it possible to adapt a single size retreading apparatus or existing mold to retread a number of different sized tires by using a retreading chamber larger than the tire, a flexible envelope around the exterior of the tire, and an inflatable means to expand the sidewalls of the tire laterally outward to engage sealing means mounted on the inner sidewalls of the retreading apparatus. In addition, vent means are provided to remove air trapped between the envelope and the tire.

3,779,833
APPARATUS FOR RETREADING TIRES

Willi E. Reppel, Lewiston, Maine, assignor to Oliver Tire and Rubber Company, Oakland, Calif.

Continuation of Ser. No. 883,161, Dec. 8, 1969, abandoned.
This application Apr. 25, 1972, Ser. No. 247,488
Int. Cl. B29h 5/04, 5/18
U.S. Cl. 156—394 16 Claims

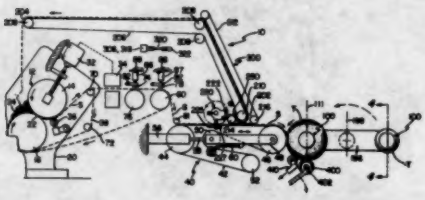


The specification discloses an apparatus for retreading a tire casing with a precured and premolded tire tread. The apparatus includes a flexible envelope which surrounds the tire and precured tread assembly from sidewall to sidewall to form with the walls of a multipart chamber device a fluid tight annular chamber surrounding the tread portion of the assembly. The apparatus includes means for inflating the interior of the assembly to laterally distend the sidewalls of the casing into engagement with sealing means mounted on the inner walls of the multipart chamber device.

3,779,834
TIRE BUILDING MACHINE

Paul E. Appleby, Cuyahoga Falls; Robert S. Riggs, Stow, and Christopher E. Christie, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 832,272, June 11, 1969, abandoned.
This application June 21, 1971, Ser. No. 155,208
Int. Cl. B29h 17/10, 17/37
U.S. Cl. 156—405 6 Claims

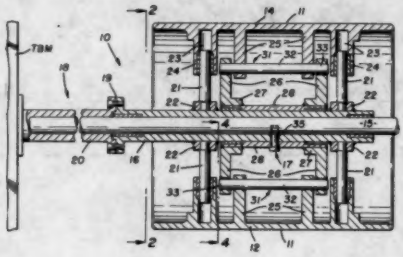


A mill for forming a thin sheet of a curable elastomer and a tire carcass receiving drum are combined in apparatus including a conveyor spaced from the mill and engageable with a tire carcass on the drum so as to rotate the drum and wind thereon a continuous plurality of convolutions of the sheet. Slitters located in a space traversed by the sheet between the mill and the conveyor and controlled by a profiling device to be movable in timed relation to the rotation of the carcass vary the width or widths of the sheet portion applied while a second conveyor diverts remaining portions of the sheet from the first conveyor for return to the mill.

3,779,835
BUILDING DRUM

Herb R. Lohr, Akron, and Toby Magos, Jr., Kent, both of Ohio, assignors to Akron Standard Division of Eagle-Picher, Industries, Akron, Ohio

Filed June 3, 1971, Ser. No. 149,509
Int. Cl. B29h 17/14; B29k 17/16
U.S. Cl. 156—417 2 Claims

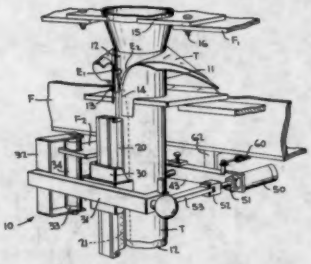


Building drum for tires, bands or laminate structures. Drum is driven by a rotary power shaft. Each segment for forming the building surface is post mounted for radial movement and carries cam followers engaging cam channels mounted coaxially of a hub connecting the drum to the power shaft. The segments are expanded by and collapsed by relative motion of the hub and the power shaft.

3,779,836
TUBE SEAMER WITH CLAMP ACTION

Nelson R. Henry, and Donald R. Middour, both of Decatur, Ga., assignors to The Woodman Company, Inc., Decatur, Ga.

Filed Mar. 26, 1971, Ser. No. 128,457
Int. Cl. B29d 23/00; B65b 9/06
U.S. Cl. 156—466 6 Claims



An arrangement is provided for forming the longitudinal seal or seam of a packaging tube by inward clamping movement of a heated sealing shoe and a backup shoe with equal and diametrically opposite force on opposite sides of the coaxial internal form or filling tube about which the packaging tube is formed or positioned. The pressing engagement of the sealing shoe against the overlapped edges of the film assures a uniform and secure seam and the backup shoe prevents misalignment of the depending filling tube by counteracting the pressing force. The opposite acting shoes are mounted on pivotal arms with 2:1 mechanical advantage gained by the fluid cylinder actuator that interconnects the free ends of the arms. Each pivot lies in a separate plane contiguous with the respective area of shoe engagement with the film on the filling tube to assure radial or straight-in movement; the two planes

thus being substantially parallel. The pivotal mounting arms are biased outwardly away from the tube and adjustable stop means is provided to assure equal withdrawal distance of the shoes. The biasing spring is on the backup arm so as to assure that nominal engagement of the sealing shoe precedes the backup shoe and that the engagement is gradual by virtue of the spring force, whereby the sealing shoe has a firm grip or seat on the overlapped edges of the film before sealing pressure is applied.

3,779,837

APPARATUS FOR SPLICING EXPOSED PHOTOGRAPHIC FILMS AND FOR ENCODING INFORMATION ON SPLICED-TOGETHER FILMS AND ASSOCIATED ENVELOPES

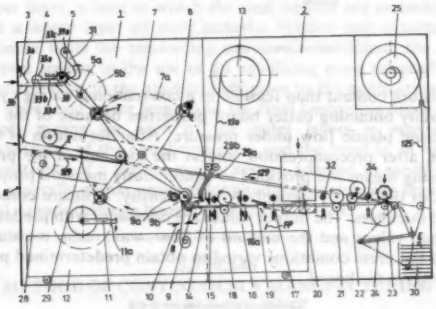
Wolfgang Zahn, Munich; Helmut Zangenfeind, Puchheim, and Erich Nagel, Anzing, all of Germany, assignors to Afga-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 28, 1972, Ser. No. 267,171

Claims priority, application Germany, June 30, 1971, P 21 32 573.5

Int. Cl. G03d *15/04*

U.S. Cl. 156—505 **25 Claims**



Drop-in cassettes for exposed photographic films and the customer envelopes from which the cassettes were removed are introduced through separate openings into a housing which is sealed against entry of light. The cassettes are moved into the range of a first conveyor system which transports the takeup spools upon removal from the cassettes, and thereupon the films upon unwinding from the takeup spools, along a first path past a splicing and on to an encoding station. The envelopes are transported stepwise and reach the encoding station simultaneously with the associated films to be provided with imprinted or otherwise encoded information which is also applied to splices between successive films. The spliced-together films are transported through a developing and print making apparatus to be thereupon separated from each other and reintroduced into the associated envelopes together with the corresponding prints, prior to being returned to customers or dealers. The number of steps performed by an envelope on its way to the encoding station equals the number of stations along which a cassette, the removed takeup spool and the unwound film move on the way of the film to the encoding station.

3,779,838

HEAT SEALING HEAD

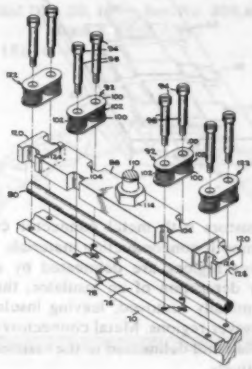
Robert J. Wech, Green Bay, Wis., assignor to FMC Corporaton, San Jose, Calif.

Filed Nov. 12, 1971, Ser. No. 198,363

Int. Cl. B32b *31/00*; **H05b** *1/00*; **B30b** *15/34*

U.S. Cl. 156—583 **7 Claims**

A heat sealing head eliminates the detrimental effects of thermal expansion by providing a construction accommodating longitudinal expansion and minimizing the effects of lateral expansion. A heater element is held to a sealing bar by spaced spring biased clamp blocks. Intermediate the clamp blocks, support bars cover the heater and are resiliently clamped to the sealing bar. A central post of each support bar connects to a rigid support beam which reciprocates to actuate the sealing bar. The heater element expands linearly under its clamp blocks, and the support bars expand linearly between the clamp blocks, thus eliminating warping stress and maintaining the active face of the sealing bar flat for optimum sealing, and in the illustrated embodiment, parallel to an oppositely disposed cooperating sealing bar having the same construction.



3,779,839

METHOD OF CONNECTING ALUMINUM OR ALUMINUM ALLOY MEMBERS

Masaharu Kaihu; Masumitu Soeda, and Hirosi Nakamura, all of Shimonoseki, Japan, assignors to Kobe Steel, Ltd., Fukiai-ku, Kobe-City, Japan

Filed July 14, 1971, Ser. No. 162,626

Claims priority, application Japan, July 25, 1970, 45/65112

Int. Cl. C23f *17/00*; **C23g** *1/10*

U.S. Cl. 156—3 **2 Claims**

A method of joining aluminum and/or aluminum alloy members by brazing in vacuum or an inert gas which includes the step of etching the aluminum or aluminum alloy and/or aluminum alloy brazing solder The a bath of etching solution to interd; ffusion fluorine ion in advance of brazing.

3,779,840

LAMINATION OF OLEFIN POLYMER TO VARIOUS SUBSTRATES

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 764,915, Oct. 3, 1968, Pat. No. 3,629,025. This application Aug. 11, 1971, Ser. No. 172,885. The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.

Int. Cl. B32b *31/24*, *27/38*, *27/32*

U.S. Cl. 156—3 **6 Claims**

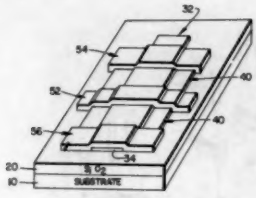
Olefin polymers, such as polyethylene, are bonded to various substrates, such as metal, glass, plastic, paper, wood, by surface sulfonating the olefin polymer and adhering the surface sulfonated olefin polymer to the substrate with epoxy resin.

3,779,841

FABRICATION OF THIN FILM RESISTOR CROSSOVERS FOR INTEGRATED CIRCUITS

Thomas J. Sanders, Indialantic, Fla., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed July 21, 1972, Ser. No. 273,939
Int. Cl. B29c 17/08; C23f 1/02
U.S. Cl. 156—8 6 Claims



Thin film resistors with metal connector crossovers are fabricated on smooth nonconducting materials. The thin film resistor crossover regions are delineated by a photo-resist emulsion. After deposition of an insulator, the photo-resist material is chemically removed, leaving insulating material only in the crossover regions. Metal connectors and interconnectors are applied and delineated to the resistor and over the insulator respectively.

3,779,842

METHOD OF AND COMPOSITION FOR DISSOLVING METALLIC COPPER

John J. Grunwald, New Haven; Leo J. Slominski, Bristol; Adela Landau, Watertown, and Dilip G. Shah, Wolcott, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed Apr. 21, 1972, Ser. No. 246,151
Int. Cl. C23f 1/00
U.S. Cl. 156—18 16 Claims

A method of and composition for dissolving metallic copper and copper rich alloys are disclosed, wherein there is employed a peroxydiphosphate compound, preferably with an adjuvant copper acceptor or solubilizing agent, to provide a stable etchant system which operates well in either acid or alkaline medium.

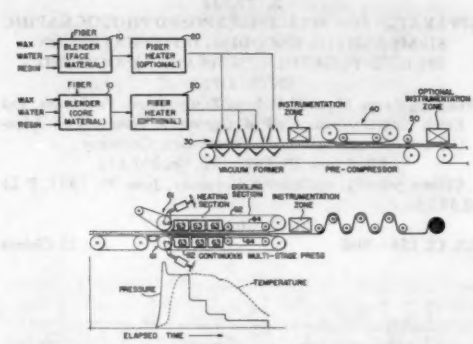
3,779,843

CONTINUOUS PROCESS FOR PRODUCING CONSOLIDATED LIGNOCELLULOSIC MATERIAL

Hans John Knapp, 2035 S.W. 58th Ave., Portland, Oreg.

Filed Jan. 21, 1971, Ser. No. 108,508
Int. Cl. B29j 5/04
U.S. Cl. 156—64 5 Claims

Hardboard and particleboard is continuously made by a continuous multi-stage press which allows humidified consolidated fibrous material to exit from the press without blisters or delamination and without the need of a subsequent humidification process. A control system is provided to insure that the end product has uniform properties. A preformed mat of moist fibrous material to which wax or other water repellent sealer and a thermosetting resin have been added is fed into a precompresser of conventional design wherein the mat is consolidated to an intermediate density without cure of the resin therein. From the precompresser the precompressed mat is fed into the nip of a continuous multi-stage press having multiple heat and pressure zones therein. Initially the mat is pressed momentarily to a pressure of up to 1,000 pli and then passed through subsequent sections of the press wherein the temperature and pressure are modified while the board is progressing through the press to (1) cure the resin in the consolidated material, and then (2) cool the consolidated mat while under pressure to prevent formation of gas pockets or blisters in the board. The cooling stage of the press is so designed to permit pressure release with sufficient moisture control in the board equal to the equilibrium moisture content control usually attained in a subsequent conventional humidification process. By this means it is possible to form a fiber mat with higher



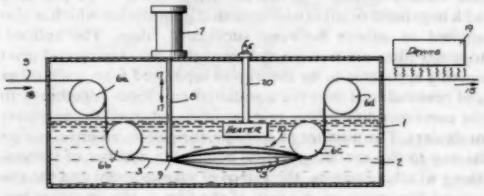
moisture content than feasible in a conventional curing cycle thereby obtaining better board properties because of the increased plastic flow under pressure. After formation of the mat, after precompression, and at the exit end of the press sensing means are provided to continuously measure properties of the board, particularly mass density, moisture content and thickness. The output values are compared with predetermined values and the amount of fiber, wax, resin, moisture, and the press conditions varied to obtain predetermined properties in the board.

3,779,844

METHOD AND APPARATUS FOR IMPROVING THE TENSILE STRENGTH OF A MULTIFILAMENT GLASS STRAND

Robert E. Dorsch, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,770
Int. Cl. B32b 31/16
U.S. Cl. 156—73 12 Claims



An apparatus and method for improving the tensile strength of a resin impregnated multifilament glass strand are disclosed. The glass strand is conveyed through an impregnating solution, simultaneously being maintained under tension while being vibrated. Each filament vibrates at its respective, natural frequency with the result that the glass strand separates into its component filaments thereby exposing a plurality of interstices to the solution so as to increase the amount of solution absorbed, whereby the tensile strength of the resin impregnated glass strand is improved.

3,779,845

METHOD FOR THE MANUFACTURE OF REINFORCED FLEXIBLE BELTS

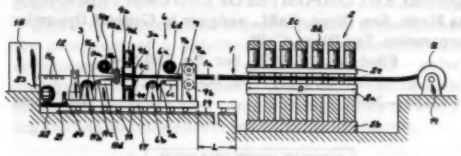
Gerhard Hutz, Suchtein/Rheinland, and H. J. Bongers, Huls, near Krefeld, both of Germany, assignors to G. Siempelkamp & Co, Krefeld, Germany

Division of Ser. No. 611,626, Jan. 25, 1967, Pat. No. 3,607,561. Filed Oct. 14, 1970, Ser. No. 80,809

Claims priority, application Germany, Jan. 26, 1966, S 101 638

Int. Cl. B29h 7/22

U.S. Cl. 156—87 1 Claim



System for the production of steel-wire-reinforced flexible belts consisting at least of an elastomeric or synthetic-resin upper layer, a core in which the steel strands are embedded and a lower layer of such material bonded into a unitary laminate while the reinforcing strands are tensioned; the invention resides in the use of an equalizing press adapted to bond the core to the steel strands prior to the application of the upper and lower layers and the final laminating phase. A supply means for each of the outer layers is provided downstream of the equalizing press and the layer is, in turn, downstream of a further supply system adapted to sandwich the generally planar array of longitudinally extending tension steel strands between layers of the core material.

3,779,846

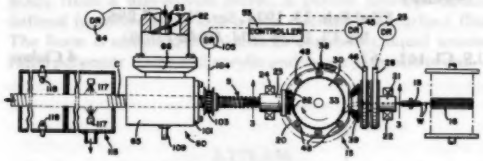
METHOD OF CONTINUOUSLY MANUFACTURING FLEXIBLE CONDUIT

Donald L. Kleykamp, West Carrollton, Ohio; Ivan Gaster; Vernon D. Browning, both of Waynesville, N.C., and Homer N. Holden, Sylva, N.C., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 89,333, Nov. 13, 1970, Pat. No. 3,725,178. This application Mar. 6, 1972, Ser. No. 231,935

Int. Cl. F16l 11/08

U.S. Cl. 156—144 5 Claims



A wire is fed from a supply roll to a device which twists the wire on its longitudinal axis and continuously forms the twisted wire into a non-rotating helical coil. The coil is fed directly from the device through a plastic tube extruding head by a rotatable screw which extends within the coil, and a vacuum is created within the tube as it is extruded over the coil to shrink the tube between the turns of the coil. The coil reinforced tube may then be fed through a device which covers the tube with a continuous fabric member, and the covered tube is then fed through another extruder head which extrudes a second tube over the fabric member and shrinks the second tube onto the fabric member and the first tube. The coil feeding screw, the fabric member forming device, the extruders, and the tube feeding devices are driven at speeds correlated with the speeds of twisting and feeding the wire to provide a continuous conduit forming operation.

3,779,847

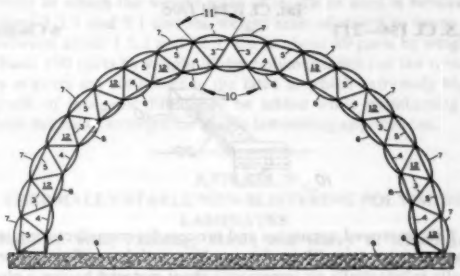
PROCESS OF ASSEMBLING FABRIC AND PLASTIC TO FORM A BUILDING STRUCTURE WHICH MAY BE INFLATED AND CHEMICALLY RIGIDIZED

Arthur A. Turner, 5500 S.W. 77 Ct., Miami, Fla.

Filed Dec. 20, 1971, Ser. No. 209,604

Int. Cl. E04b 1/345

U.S. Cl. 156—156 7 Claims



A compacted assembly of folded fiberglass fabric secured in a multiple pleated truss formation sewed between flat sheets of like material for inflatior forming a building of predetermined volume. The interstices in the fabric contain uniform distribution of uncured plastic resin. The assembly is covered with sheet plastic secured thereto for inflation. Following inflation of the voids within the assembly, the uncured resin is responsive to the introduction of a curing agent to all inner surfaces for curing the resin into a solid, resulting in a rigid high-strength self-supporting building or housing resistant to external stresses in any direction.

3,779,848

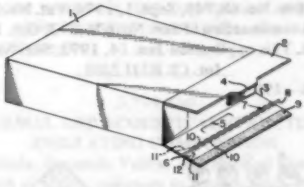
METHOD OF MAKING CONTAINER OPENING STRUCTURE COMPRISING FLEXIBLE TAPE AND PRESSURE-RUPTURABLE CAPSULES

Theodore Maierson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 879,039, Nov. 24, 1969, Pat. No. 3,599,859. This application Mar. 15, 1971, Ser. No. 124,542

Int. Cl. B32b 5/00, 31/00

U.S. Cl. 156—178 4 Claims



This disclosure is directed to container opening structures comprising a container wall member, such as a closure, e.g., a lid, to which there is attached at least one flexible closure tearing means accessible from the exterior of the container and a plurality of pressure-rupturable capsules, each of which contains a volatilizable core material, e.g., perfume or other

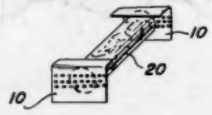
fragrance, located between the container wall or lid and the tearing means. Preferably, the tearing means is a flexible tape composed of a plurality of parallelly arranged monofilaments. The operation of the tearing means serves to rupture at least some of the capsules during opening of the container.

3,779,849

APPARATUS AND METHOD FOR MANUFACTURING JET IMPINGEMENT TYPE FILTERS FOR SMOKING ARTICLES

Hoyt S. Beard; Leslie E. Payne, and Colin S. McArthur, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 13, 1971, Ser. No. 171,448
Int. Cl. H24d *1/06*
U.S. Cl. 156—212 **6 Claims**



This improved apparatus and process for manufacturing jet impingement type filters for smoking articles utilizes a normally substantially air impervious sheet material having a plurality of preformed smoke passing perforations therein and a rod of smoke pervious filter material. A tab of the perforated sheet material is positioned over the end of the rod of filter material by securing a peripheral portion of the perforated tab to the longitudinal surface of the filter rod adjacent an end whereby a major portion of the tab extends beyond the end and folding the major portion transverse the axis of the filter rod with peripheral areas extending radially outwardly from the longitudinal surface. These peripheral portions are further folded or draped over the longitudinal surface of the filter rod and secured thereto so as to form a cup-like enclosure or cap over the end.

The preferred apparatus for assembling the filter comprises a female die, means for successively tabbing filter rods with the perforated sheet material and aligning the tabbed filter rods adjacent the opening in the female die with the tabs folded therebetween and means for effecting relative reciprocal movement whereby the female die cups or caps the tabs over the ends of successive filter rods. The resulting cupped-tab filter plugs are then disposed in gaseous communication with a smokable material such as a cigarette rod by, for example, an overwrap of conventional tipping paper.

3,779,850

SUPERIMPOSED EMBOSSED PACKING SHEETS

George Gerard, Point, N.J., assignor to Jiffy Manufacturing Co., Hiside, N.J.

Division of Ser. No. 68,745, Sept. 1, 1970, Pat. No. 3,668,055, which is a continuation of Ser. No. 676,573, Oct. 19, 1967, abandoned. This application Jan. 14, 1972, Ser. No. 218,031
Int. Cl. B31f *7/00*
U.S. Cl. 156—199 **3 Claims**

The disclosure of the present application relates to embossment between engraved rollers of a series or plurality of sheets of relatively heavypaper or similar matted fibrous materials to obtain varying patterns of rows of mound-like embossments which are arranged in successive areas, usually successive squares, longitudinally and then diagonally in respect to the main axis of the paper sheets. After embossment the sheets are passed through shorter or longer paths of travel before again being assembled so that their matching mounds and recesses will be offset in such a manner that they will not longer match.

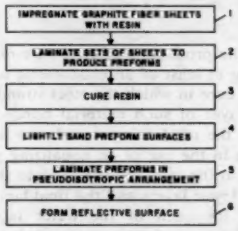
The disclosure further relates to the composite packing material and to a method and apparatus for making the same.

3,779,851

METHOD OF FABRICATING THIN GRAPHITE REINFORCED COMPOSITES OF UNIFORM THICKNESS

Julius Hertz, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Dec. 22, 1971, Ser. No. 210,694
Int. Cl. C09j *5/00*; B32b *5/12*
U.S. Cl. 156—309 **18 Claims**



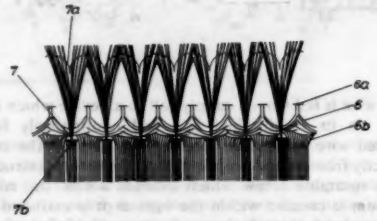
A method of making high strength, low thermal expansion thin composite structures of uniform thickness is disclosed. A plurality of resin impregnated graphite fiber sheets are laminated together to provide composite preforms. A plurality of the preforms are then bonded together in a pseudoisotropic arrangement between parallel plates. The resulting structures are especially useful as substrates for flat or slightly contoured mirrors.

3,779,852

TEXTILE FABRIC AND METHOD OF PRODUCING SAME

Siegfried Ploch; Walter Scholtis; Heinz Zschunke, and Dieter Scharch, all of Karl-Marx-Stadt, Germany, assignors to Forschunginstitut Fur Textiltechnologie, Karl-Marx-Stadt, Germany

Filed Feb. 23, 1971, Ser. No. 117,896
Int. Cl. B32b *7/04*; D04h *11/00*
U.S. Cl. 161—62 **4 Claims**



A textile fabric comprising a first mechanically consolidated fibrous web having first and second faces, arranged on the first

face a second fibrous web folded upon itself to form pile tufts, fastening the second fibrous web to the first fibrous web fiber loops originating in the second fibrous web and forming stitches on the second face, and the second face having a plush surface comprised of fibers originating in the first web.

3,779,853

CRIMPABLE BICOMPONENT FILAMENT

Earl Herbert Olson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 5, 1972, Ser. No. 215,625
Int. Cl. D02g *3/00*; **C08g** *20/00*
U.S. Cl. 161—70 **7 Claims**

Improved bicomponent filaments for use in stretch hosiery are composed of a poly(hexamethylenedodecanedioamide) component and an N-alkyl substituted poly(hexamethylenedodecanedioamide) component. The filament are strong and develop a high crimp with high crimp recovery during knitting and subsequent hot finishing treatments.

3,779,854

POLYVINYLIDENE FLUORIDE LAMINATE CONSTRUCTION AND METHOD

Andrew Anthony Dukert, Ambler, and Alkis Christofas, Levittown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 18, 1971, Ser. No. 154,591
Int. Cl. B32b *27/06*
U.S. Cl. 161—156 **9 Claims**

A reinforced laminate construction utilizing a sheet-like flexible fibrous or porous matrix whose interstices are impregnated with a resin selected from the group consisting of vinylidene fluoride homopolymers, copolymers and terpolymers applied from a liquid carrier.

3,779,855

POROMERIC MATERIALS

Giorgio Fonzi, Saronno, and Silvio Vargiu, Sesto S. Giovanni, both of Italy, assignors to Societa Italiana Resine S. I. R. S. P. A., Milan, Italy

Filed Apr. 24, 1972, Ser. No. 246,577
Claims priority, application Italy, Apr. 30, 1971, 23911/71
Int. Cl. B32b *3/00, 31/00*; **D06n** *3/08*
U.S. Cl. 161—159 **11 Claims**

Poromeric materials for footwear and other purposes are made from a non-woven fabric, a porous layer of certain defined foamed resins, and a thin microporous surface film. The foam is obtained from lattices containing liquid unsaturated polyester resins and acrylic and/or acrylonitrile resins.

3,779,856

GLASS-CERAMIC AND METHOD FOR MAKING SAME

Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 23, 1971, Ser. No. 165,744
Int. Cl. C03c *23/00, 3/22*
U.S. Cl. 161—164 **8 Claims**

High-strength glass-ceramics and a method of producing glass-ceramics having high strengths and good thermal shock resistance wherein a thermally crystallizable glass containing a nucleating agent capable of changing valency and which is more effective in the changed valency state is thermally in situ crystallized in a reducing atmosphere to form an at least partially crystalline glass-ceramic having a coefficient of thermal expansion which is considerably lower than that of the parent glass and having a high compressive stress layer on its surface.

3,779,857

TEXTILE LAMINATING COMPOSITIONS AND COMPOSITE TEXTILE STRUCTURES LAMINATED THEREWITH

Robert B. Hadgraft, East Ridge, and John J. Martin, Hixson, both of Tenn., assignors to Standard Brands Chemical Industries, Inc., Dover, Mass.

Continuation-in-part of Ser. No. 126,961, March 22, 1971, abandoned. This application Apr. 27, 1972, Ser. No. 248,269
Int. Cl. B32b *25/10, 25/16*
U.S. Cl. 161—88 **10 Claims**

A latex composition especially suitable as a base for textile laminating compounds comprising (1) an elastomeric polymer latex and (2) a ternary mixture of granular starch, urea and borax in which the weight ratio of starch to urea is between about 1.2:1 and 5:1 and the weight ratio of starch to borax is between about 1.5:1 and 12:1. Up to about 40 parts by weight (basis 100 parts by weight of dry polymer solids) of the ternary mixture are contained in the latex to which extremely high levels of inorganic filler may be added while maintaining a high degree of strength for textile laminating applications.

3,779,858

THERMALLY STABLE NON-BLISTERING POLYIMIDE LAMINATES

Roger A. Hiss, Flushing, Mich., and Harry E. Kime, Jr., Collingdale, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 120,766, March 3, 1971, abandoned. This application Sept. 24, 1971, Ser. No. 183,625
Int. Cl. B32b *17/10*
U.S. Cl. 161—170 **8 Claims**

Non-blistering polyimide laminates are formed from polyimide precursor impregnated sheets wherein the resultant polyimide laminate has a void volume of at least about 3.5% and not more than about 10%, as measured by mercury intrusion method, and the voids exist substantially in and around the fabric layer.

3,779,859

CRIMPABLE COPOLYAMIDE FILAMENTS

Earl Herbert Olson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 5, 1972, Ser. No. 215,683
Int. Cl. D02g *3/00*; **C08g** *20/00*
U.S. Cl. 161—173 **3 Claims**

Filaments which develop crimp when relaxed, of a copolymer composition comprising 6–12 nylon polymer units and N-substituted 6–12 nylon polymer units wherein the N-substituent is an alkyl group of 2 to 4 carbon atoms, from 15 to 50 percent of the nitrogen atoms in the copolymer being alkyl substituted. The filaments are particularly suitable for use in stretch hosiery. They provide a much softer feel and much lower snagging propensity than conventional stretch hose of 66 nylon, while avoiding undesirable characteristics of elastomeric filaments.

3,779,860

THERMAL AND ACOUSTICAL STRUCTURAL INSULATING COMPOSITION

Otto A. Oshida, Fountain Valley, and Michael Shawgo, Buena Park, both of Calif., assignors to Grefco, Inc., Philadelphia, Pa.

Filed Mar. 9, 1972, Ser. No. 233,285
Int. Cl. D21f *11/00*
U.S. Cl. 162—129 **14 Claims**

A coated thermally expanded mineral aggregate thermal and acoustical insulating structural composition and a process for its production is provided wherein a low consistency board furnish containing binder, defibrillated fibrous material and a relatively high percentage of glass reinforcing fibers is

deposited on the surface of a partially dewatered mat containing defibrillated fibrous material, binder and 50–85 percent thermally expanded mineral aggregate by weight of the total board composition, pressing and drying to produce an integrally formed multiply structural composition.

3,779,861

FIREPROOFING CELLULOSE-CONTAINING MATERIALS

James R. Jones, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed July 24, 1972, Ser. No. 274,327
Int. Cl. D21h *3/00*
U.S. Cl. 162—145 **7 Claims**

Cellulosic fiber-containing board products of improved fire-retardant characteristics are obtained by treating the cellulosic fibers with urea prior to board formation and decomposing the urea in situ, for instance in the dewatered mat during board fabrication. Cellulosic fiber-containing boards having improved flame-spread ratings are obtained when the cellulosic fibers and urea are reacted at temperatures in excess of the decomposition temperature of urea, i.e., temperatures above about 380° F., but below the temperature at which the cellulosic fibers degrade. Preferably, the fibers are treated with aqueous urea solutions prior to board formation.

3,779,862

FLEXIBLE, INTERMEDIATE TEMPERATURE, MINERAL WOOL BOARD

Henry A. Bomberger, Landisville, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 21, 1971, Ser. No. 210,593
Int. Cl. D21f *11/02*
U.S. Cl. 162—152 **2 Claims**

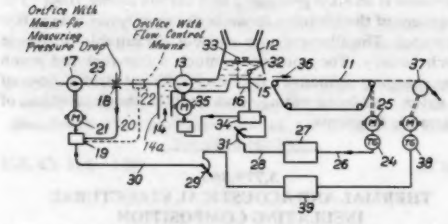
Mineral wool fibers are coated with a latex particle in a beater dispersion technique. The coated mineral wool fibers which are in a slurry are then processed to form sheets which are dried to produce a flexible mineral wool blanket.

3,779,863

STOCK FLOW CONTROL SYSTEM FOR FEEDING A PAPER MACHINE HEADBOX

Douglas Wahren, Taby, Sweden, assignor to Allmanna Svenska Elecktriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 12, 1970, Ser. No. 10,713
Claims priority, application Sweden, Feb. 18, 1969, 2196/69
Int. Cl. D21f *1/06*, *1/08*
U.S. Cl. 162—253 **4 Claims**



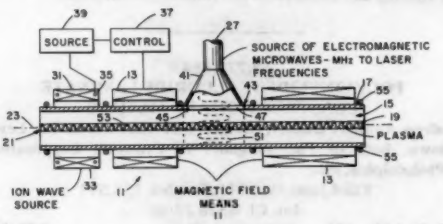
Stock feed to a paper machine headbox is controlled by a stock (fan) pump which is controlled to run at variable speeds, the input of stock to the pump originating from a thick stock containing conduit and a conduit containing mixing water. The speed of the pump motor is controlled by a signal from a control element which is responsive to measurements of the stock level or pressure within the headbox and an adjusted value of the forming wire speed. In addition, a thick stock pump located in the thick stock conduit is adjusted to run at a variable speed by a control device which is responsive to signals indicating the pressure drop across an orifice in the thick stock conduit and a signal based on the web speed. Alternatively, the thick stock pump may run at a constant speed and the control device can be used to control an orifice opening or throttling device located in the thick stock conduit between the pressure-drop determining orifice and the stock (fan) pump.

3,779,864

EXTERNAL CONTROL OF ION WAVES IN A PLASMA BY HIGH FREQUENCY FIELDS

Predhiman K. Kaw, Ahmedabad, India, and John M. Dawson, Princeton, N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 29, 1971, Ser. No. 193,749
Int. Cl. G21b *1/00*
U.S. Cl. 176—1 **8 Claims**



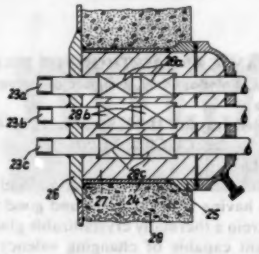
Apparatus and method for stabilizing plasma instabilities, in a magnetically confined plasma column by transmitting into the plasma high frequency electromagnetic waves at a frequency close to the electron plasma frequency. Said frequencies, e.g., are between the plasma frequency and 1.5 times said plasma frequency at a power level below the level for producing parametric instabilities in a plasma having temperatures from below 10 ev to about 10 KeV or more, at densities from below 10^{13} to above 10^{18} particles/cm^3. In another aspect, this invention also provides a plasma diagnostic.

3,779,865

FEED-THROUGH CONNECTION FOR A PRESSURE VESSEL, ESPECIALLY A NUCLEAR-REACTOR SHELL

Heinrich Gunter Schafstall, and Wolfgang Otto August Furste, both of Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 12, 1970, Ser. No. 79,909
Int. Cl. G21c *9/00*
U.S. Cl. 176—38 **5 Claims**



The concrete shell of a nuclear reactor, through which conduits extend, is formed with a feed-through connector

anchored in the wall of the structure and traversing same. The connector includes a self-blocking safety snap-action conduit coupling surrounded by a containment including a metallic duct, a pressure reducing packing received in the duct around the conduit, and means for evacuating the annular space about the latter to eliminate leakage fluids.

3,779,866

MICROBIAL DEGRADATION OF POLYCHLORINATED BIPHENYLS

Edward N. Azarowicz, Vienna, Va., assignor to Bioteknike International, Inc., Alexandria, Va.

Filed Apr. 7, 1972, Ser. No. 242,192
Int. Cl. C12b *1/00*
U.S. Cl. 195—2 **29 Claims**

A process for the microbial degradation of polychlorinated biphenyls (PCBs) which comprises treating the PCBs with certain non-pathogenic, hydrocarbon-utilizing strains of Cladosporium cladosporioides, Candida lipolytica, Nocardia globerula, Nocardia rubra and/or Saccharomyces cerevisiae until the PCBs have been substantially degraded. The process is applicable degrading PCBs as they may be present as pollutants or contaminants in water, in industrial effluents, in various land areas such as industrial sites and the like or in varied laboratory or commercial installations. The process may also be used to clean up and degrade mixtures of PCBs and various hydrocarbon oils or petrochemicals whenever their presence constitutes a deleterious pollution.

3,779,867

PRODUCTION OF POLYNUCLEOTIDES

Yoshiki Katoh; Akira Kuninaka, and Hiroshi Yoshino, all of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Choshi-shi, Chiba-ken, Japan

Filed Feb. 1, 1971, Ser. No. 111,728
Claims priority, application Japan, Feb. 16, 1970, 45/12630
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 **4 Claims**

Production of polynucleotides by incubating one or more kinds of nucleoside diphosphate in the presence of one or more kinds of divalent cation with a cultured material of a strain of microorganism rich in extractable polynucleotide phosphorylase and poor in enzymes degrading nucleic acids and nucleoside diphosphates is described.

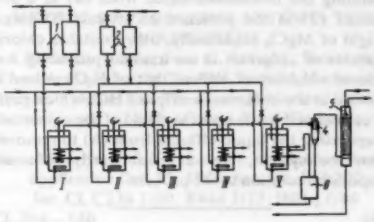
3,779,868

MICROBIOLOGICAL METHOD OF PRODUCING EDIBLE ACETIC ACID

Petr Ivanovich Nikolaev, Pulkovskaya ulitsa, 27, kv. 105; Jury Lazarevich Ignatov, ulitsa F. Poletaeva, 28, kv. 153; Sergei Ivanovich Smirnov, Shmidtovsky proezd, 9, kv. 29; Naum Izrailevich Oxengorn, ulitsa letchkka Babushkina, 27, kv. 8; Rimma Fominichna Gigineishvili, ulitsa Ulyanova, korpus 1, kv. 54; Klara Moisseyna Dvorkina, pereulok, 11, kv. 3, and Akhmet Mukhsinyatovich Iskandyarov, Yartsevskaya ulitsa, 27, korpus 4, kv. 36, all of Moscow, U.S.S.R.

Filed July 15, 1971, Ser. No. 162,793
Int. Cl. C12d *1/02*; C12j *1/04*
U.S. Cl. 195—49 **4 Claims**

A microbiological method of producing edible acetic acid consists in cultivating acetic-acid bacteria in a continuous-growth process on a culture medium containing ethanol, acetic acid, mineral salts and water, under aeration; then the starting culture medium is continuously fed into the resultant culture liquid containing at least 2.5 vol. percent of acetic acid produced, at a flow rate necessary to maintain said acetic acid concentration; the resulting culture liquid is continuously discharged at the abovesaid flow rate for the ethanol to be further oxidized by acetic bacteria into acetic acid, the ethanol oxidation process being at least twice repeated depending upon the predetermined acetic acid concentration and occurring under aeration of the culture liquid and a simultaneous feeding of ethanol thereto in an amount sufficient to



obtain the required acetic acid concentration, the concentration values of both acetic acid and ethanol at each oxidation step being maintained constant.

The herein-disclosed method is applicable in the food industry.

3,779,869

ENZYME STABILIZATION

Mitchell Frank Zienty, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 13, 1971, Ser. No. 143,194
Int. Cl. C12d *13/10*
U.S. Cl. 195—68 **3 Claims**

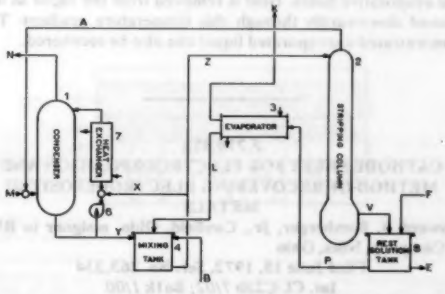
The glucose isomerase activity contained within bacterial cells can be stabilized by treating the bacterial cells with glutaraldehyde. The resulting stabilized enzyme can be used for conversion of glucose to fructose and then reused for further conversions with minimum reduction in enzyme activity after each use.

3,779,870

RECOVERY OF ANHYDROUS HCL GAS BY EXTRACTIVE DISTILLATION WITH A HALIDE SALT

Sigmund Gudmundsen, Saetre I Hurum; Egil Ronaess, Porsgrunn; Sver Arne Kjolberg, Porsgrunn, and Glor Thorvald Mejdell, Prosgrunn, all of Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed July 19, 1971, Ser. No. 163,758
Claims priority, application Norway, July 17, 1970, 2816/70
Int. Cl. B01d *3/00*
U.S. Cl. 203—12 **9 Claims**



A process for the recovery of substantially anhydrous HCl gas from hydrous HCl gas employing extraction distillation in

the presence of one or more dissolved salts, characterized by

a. directly contacting and cooling the aqueous HCl gas in a condenser (1) with a recirculating hydrochloric acid solution of a strength above that of the azeotropic composition, which solution may contain dissolved one or more chlorides suitable for increasing the ratio of the volatility of HCl to that of H_2O, and by withdrawing the desired dehydrated HCl gas from the condenser,

b. distilling the condensed liquid from (a) in a stripping column (2) in the presence of at least 20 percent by weight of $MgCl_2$ (optionally, other suitable chlorides or mixtures of chlorides in an amount providing a similar ratio of volatility of HCl to that of H_2O), based on the mixture in the column, to strip off HCl, which preferably is recirculated to the process ahead of the condenser (1),

c. evaporating the liquid effluent from (b) to remove water from the system, and at least partly returning the evaporated solution to the process.

3,779,871

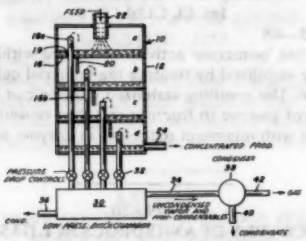
METHOD OF MULTIPLE EFFECT EVAPORATION

Melvin H. Brown, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 805,195, March 7, 1969, Pat. No. 3,575,817. This application Feb. 16, 1971, Ser. No. 115,160

Int. Cl. B01d *3/00, 3/06, 3/02, 3/08, 1/22, 1/26, 3/10, 3/28*

U.S. Cl. 203—88 **7 Claims**



A portion of an impure liquid is evaporated and the vapor condensed to provide a purified liquid product such as purified water. Evaporation is effected by a process employing a plurality of evaporative zones. According to the new arrangements, evaporation is effected in a plurality of zones and the vapor removed downwardly through elongate chambers. A downwardly decreasing thermal gradient is established in the unevaporated liquid by properly controlling the pressures in the evaporative zones. Heat is removed from the vapor as it is moved downwardly through this temperature gradient. The concentrated unevaporated liquid can also be recovered.

3,779,872

CATHODE SHEET FOR ELECTRODEPOSITION AND METHOD OF RECOVERING ELECTRODEPOSITED METALS

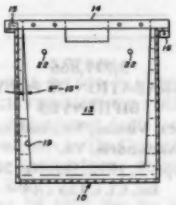
Howard B. Bomberger, Jr., Canfield, Ohio, assignor to RMI Company, Niles, Ohio

Filed June 15, 1972, Ser. No. 263,334

Int. Cl. C23b *7/02;* **B01k** *1/00*

U.S. Cl. 204—12 **11 Claims**

A cathode sheet of titanium for use in an electrodeposition process for metals, such as copper, and a method of recovering the metal. The sheet is thin and its width tapers in the downward direction. After a deposit of the metal has built up on both faces and around the side and bottom edges of the sheet, the sheet and deposit are taken from the electrodeposition apparatus. The deposit is heated to expand it to a greater extent than the sheet, allowing the deposit to be slipped off readily.



3,779,873

PROCESS FOR METAL COATING DIAMONDS

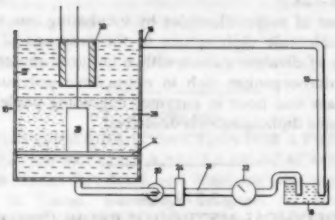
Bruce Ian Dewar, Johannesburg, Republic of South Africa, assignor to DeBeers Industrial Diamond Division Limited, Johannesburg, Republic of South Africa

Filed May 22, 1972, Ser. No. 255,574

Claims priority, application South Africa, June 1, 1971, 71/3502

Int. Cl. C23b *5/60;* **B01k** *3/00*

U.S. Cl. 204—20 **2 Claims**



A method of metal coating, particularly electrolytically, particulate material such as diamond, cubic boron nitride or the like which includes the steps of forming a bed of the material, fluidising the bed by passing a metal coating solution through it, and causing the metal to deposit on to the material.

3,779,874

NICKEL ELECTROPLATING BATHS

Walter Schenk, Bad Duerkheim, and Friedrich Hovemann, Hockenheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Division of Ser. No. 193,996, Oct. 29, 1971, Pat. No. 3,730,854. This application Oct. 13, 1972, Ser. No. 297,199

Int. Cl. C23b *5/08, 5/46*

U.S. Cl. 204—49 **5 Claims**

Stablized aqueous solutions of aliphatic unsaturated sulfonic acids which contain aliphatic chlorine compounds, and

nickel-plating baths containing said stabilized aqueous solutions as brighteners.

3,779,875

PREPARATION OF GLYOXYLIC ACID

Daniel Michelet, Sainte-Foy-Les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Aug. 18, 1972, Ser. No. 281,741

Claims priority, application France, Aug. 20, 1971, 7130396

Int. Cl. C07b *29/06*; **C07c** *51/40*, *53/08*

U.S. Cl. 204—76 **7 Claims**

In the cathodic reduction of oxalic acid to glyoxylic acid production of hydrogen is reduced when the catholyte contains oxalic acid and 0.001 percent – 1 percent of an adjuvant which is a tertiary amine or quaternary ammonium derivative having more than 11 carbon atoms and, the nitrogen of which is not part of an unsaturated heterocyclic ring, or a heterocyclic tertiary amine or quaternary ammonium derivative thereof, the heterocyclic ring being unsaturated, containing a nitrogen atom and at least five carbon atoms.

3,779,876

PROCESS FOR THE PREPARATION OF GLYOXYLIC ACID

Daniel Michelet, Sainte-Foy-Les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Aug. 18, 1972, Ser. No. 281,742

Claims priority, application France, Aug. 20, 1971, 7130395

Int. Cl. C07b *29/06*; **C07c** *51/40*, *53/00*

U.S. Cl. 204—76 **12 Claims**

Glyoxylic acid is prepared by a process facilitating recovery of glyoxylic acid, the process being electrolytic reduction of oxalic acid in an electrolysis cell in which

a. the cathode is solid and metallic with a hydrogen overvoltage which is greater than the potential for the reduction of oxalic acid to glyoxylic acid,

b. the separating diaphragm is a cation exchange membrane,

c. the catholyte comprises an aqueous solution of oxalic acid which is free of a strong inorganic acid,

d. the catholyte moving in a closed path by being passed into the cathode compartment, over the surface of the cathode, being removed from there and being returned to the cathode compartment, and

e. the temperature of the catholyte is between 0° and 70°C.

3,779,877

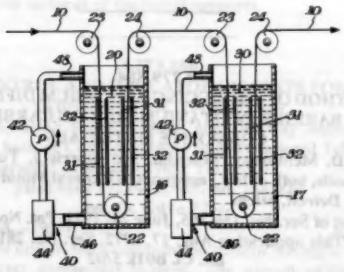
ELECTROLYTIC ETCHING OF ALUMINUM FOIL

Robert S. Alwitt, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Feb. 22, 1972, Ser. No. 227,951

Int. Cl. C23b *3/02*, *1/00*

U.S. Cl. 204—129.75 **4 Claims**



A two stage electro-etch for increasing the effective surface area of high voltage aluminum foil comprises a first electro-etch in an alkali metal halide, preferably sodium chloride, followed by a second electro-etch in a neutral solution of a nitrate salt. The results produced with this process compare most favorably with the most advantageous processes known to the art today, and foils etched therein are less expensive to produce.

3,779,878

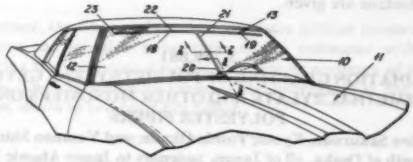
METHOD OF PRODUCING ANTENNA TYPE WINDSHIELDS

Howard R. Swift, Toledo; Ivan L. Soreghy, Swanton; George H. Thacker; Lazarus D. Thomas, both of Maumee; Paul T. Mattimoe, Toledo, and Theodore J. Motter, Genoa, all of Ohio, assignors to Libby-Owens-Ford Company, Toledo, Ohio

Division of Ser. No. 833,302, June 16, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,227

Int. Cl. C23b *1/00*; **B44d** *1/18*; **H01q** *1/40*

U.S. Cl. 204—140 **10 Claims**



A laminated glass windshield having incorporated with it an antenna of tarnished silver that is produced by applying a silver-frit paste to a surface of one glass sheet in a pattern of thin lines extending horizontally across the upper portion of the sheet toward the middle and then downwardly into a crescent shaped figure, firing the applied pattern to the glass, and treating the lines of the pattern with sulfur. The lower edges of the plastic interlayer and the other glass sheet in the windshield are cut out to facilitate connection with a lead wire.

3,779,879

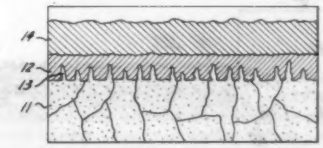
METHOD OF STRIPPING ALUMINIDE COATINGS

Bruce E. Scott, Wyckoff, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Dec. 11, 1972, Ser. No. 313,873

Int. Cl. B01k *1/00*

U.S. Cl. 204—146 **9 Claims**



A process for stripping aluminide coatings from metals and alloys of the iron group, by making the article to be stripped the anode in an electrolyte comprising an oxidizing acid, at a potential not higher than 2.4 volts.

3,779,880

PROCESS FOR PREPARING THIETANE DERIVATIVES

Atsuyoshi Ohno; Yutaka Ohnishi, both of Sagamihara, and Genichi Tsuchihashi, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Toyko, Japan

Continuation-in-part of Ser. No. 889,746, Dec. 31, 1969, abandoned. This application May 1, 1972, Ser. No. 249,215
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R 4 Claims

A process for preparing thietane derivatives which comprises reacting a thiocarbonyl compound with olefine by the irradiation of light having a wavelength above 3,000 A. The thiocarbonyl compound used is thiobenzophenone, the olefins used can be acrylonitrile, dichloroethylene, methylacrylate, dicyanoethylene, vinyl acetate, or alkenyl or substituted alkenyl benzene. The obtained thietane derivatives are useful as the starting materials for insecticides and sulfur containing polymers. Novel compounds, i.e., 3-cyano-2,2-diphenyl thietane; cis-3,4-dichloro-2,2-diphenyl thietane; trans-3,4-cichloro-2,2-diphenyl thietane; 3-methoxycarbonyl-2,2-diphenyl thietane; trans-3,4-dicyano-2,2-diphenyl thietane; 3-acetoxy-2,2-diphenyl thietane; 2,2,3-triphenyl-3-methyl thietane; 2,2,3-triphenyl-4-methyl thietane and 2,2,3-triphenyl thietane are given.

3,779,881

RADIATION GRAFTING OF POLY(ETHYLENE GLYCOL) DIMETHACRYLATE AND OTHER MONOMERS ONTO POLYESTER FIBERS

Ichiro Sakurada, Kyoto; Toshio Okada, and Yasunao Shimano, both of Osaka, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Jan. 18, 1972, Ser. No. 218,815
Claims priority, application Japan, Jan. 22, 1971, 46/1571
Int. Cl. B01j *1/10, 1/12*
U.S. Cl. 204—159.15 5 Claims

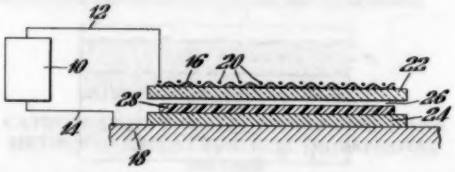
A mixture of poly (ethylene glycol) dimethacrylate and an alkali metal salt of an ethylenically unsaturated organic acid is polymerized by means of an ionizing radiation on the surface and inside of a polyester fiber material such as poly (ethylene terephthalate) fiber. The treated polyester fiber material is provided with the antistatic and hygroscopic properties as well as durability by washing.

3,779,882

ELECTRODE METHOD FOR THE SURFACE TREATMENT OF THERMOPLASTIC MATERIALS

Louis Aaron Rosenthal, Highland Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,243
Int. Cl. C08f *47/22*; H01t *19/00*
U.S. Cl. 204—165 3 Claims



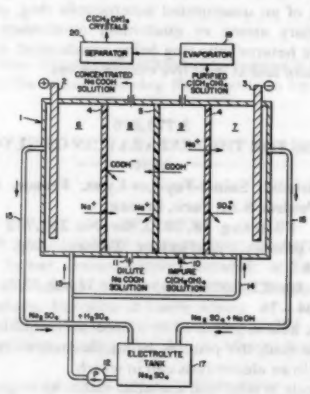
In the corona discharge surface treatment of a thermoplastic material body wherein said body is positioned in an air gap between a pair of electrodes across which a high voltage is impressed, the improvement which comprises employing as one of said pair of electrodes a wire mesh comprising a plurality of relatively small diameter conductors spaced to provide a uniform high gradient field and the other of said pair of electrodes being a solid base electrode.

3,779,883

PENTAERYTHRITOL PURIFICATION PROCESS

Allyn H. Heit, San Mateo, Calif., assignor to Sybron Corporation, Rochester, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,383
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 P 12 Claims



Formate salts such as sodium formate are removed from a pentaerythritol solution in an electrodialysis unit divided by a stack of alternating cation and anion permselective membranes into an anode compartment, a series of alternating concentration and dilution compartments, and a cathode compartment. The anode compartment is contiguous to a concentration compartment and, preferably, the cathode compartment is contiguous to a dilution compartment. The impure pentaerythritol solution passes through the dilution compartments; an electrically conductive liquid, preferably a dilute solution of the impurity in the pentaerythritol solution, passes through the concentration compartments; and an electrolyte containing a salt, preferably one with the same cation as the formate salt in the pentaerythritol solution, is circulated from a common tank through the anode and cathode compartments and back to the tank.

3,779,884

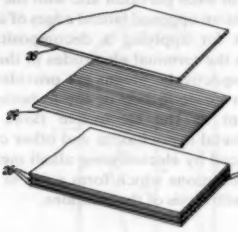
METHOD OF PRODUCING ZIRCONIUM DIFFUSION BARRIER IN TITANIUM-SILICON CARBIDE COMPOSITE MATERIALS

Nolan D. McMurray, Franklin, and Morris J. Tumey, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 156,365, June 24, 1971, Pat. No. 3,717,443. This application Aug. 17, 1972, Ser. No. 281,477
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 3 Claims

A composite article, comprising silicon carbide-containing reinforcing filaments in a titanium or titanium alloy matrix, is

found to have increased strength when the filaments are initially provided with a thin coating of zirconium. The zirconi-



um acts as a barrier to interdiffusion of titanium and silicon carbide and prevents weakening of the composite structure which would otherwise result from such interdiffusion.

3,779,885

APPARATUS AND METHOD FOR CATHODE SPUTTERING ON THE TWO SIDES OF A METALLIC SUPPORT HAVING LARGE DIMENSIONS

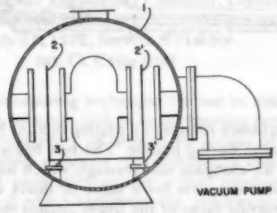
Pierre Labedan, Crepieux La Pape, and Robert Masotti, Lyon, both of France, assignors to PROGIL, Paris, France

Filed June 15, 1971, Ser. No. 153,217

Claims priority, application France, July 10, 1970, 7026730

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **3 Claims**



Apparatus and method for depositing thin layers by cathodic sputtering onto metallic supports wherein a rarefied gaseous enclosure is provided having an ionic bombardment stage and a cathodic sputtering stage with means for transferring the supports from the first stage to the second stage without cooling or admitting air, each stage acting simultaneously on both surfaces of the metal supports.

3,779,886

CONTROL AND INDICATOR CIRCUITS FOR COULOMETRIC TITRATORS

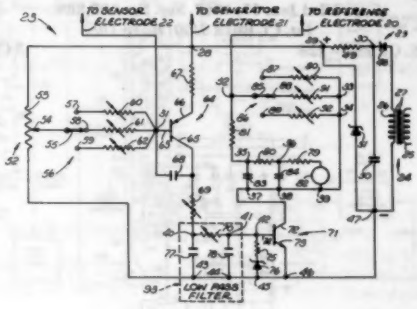
Art Murphy Dean Moen, Covina, and Jim Ray Robison, La Mirada, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,024

Int. Cl. G01n *27/44*

U.S. Cl. 204—195 T **8 Claims**

A control circuit for a coulometric titrator having a recording voltmeter connected therein. The circuit utilizes two transistors of opposite conductivity types between which a low pass filter is connected. An emitter bias resistor is employed with one transistor. A zener diode and a resistor provides quiescent bias for the other transistor. The one transistor is provided with a base bias that is adjusted through the use of a potentiometer to cause both transistors to operate slightly above cut-off when the monitored fluid concentration is zero.



The zener, the filter and the one transistor emitter resistor all improve the signal-to-noise ratio at the voltmeter without reducing the voltmeter dynamic response or accuracy of indication. The extraordinary range of the instrument is, for this reason, down to two parts per billion.

3,779,887

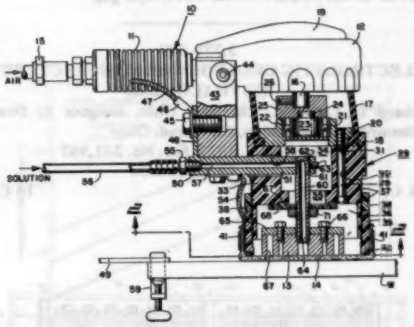
VIBRATORY APPLICATOR FOR ELECTROPLATING SOLUTIONS

Anthony M. Gildone, Euclid, Ohio, assignor to Sifco Industries, Inc., Cleveland, Ohio

Filed Mar. 14, 1972, Ser. No. 234,590

Int. Cl. B23p *1/02*; C23b *5/76*

U.S. Cl. 204—224 R **11 Claims**



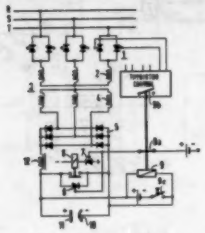
A vibratory tool for the brush electrotreatment of metal and especially for electroplating at increased rates of metal deposition as compared with non-vibratory tools. In one form, the apparatus comprises a hand tool having a plating terminal that is preferably fixed with respect to the tool. A housing encompasses the plating terminal and carries a porous dielectric cover in contact with the plating terminal. The cover is wet by electrolyte and rubbed over a workpiece. Power vibratory means positively moves the housing and porous cover with respect to the plating terminal while maintaining the contacting relation between the cover and terminal, so that in use the cover is vibrated with respect to both the workpiece and the plating terminal.

3,779,888

DEVICE FOR LIMITING THE SHORT-CIRCUIT ENERGY IN ELECTROLYTIC METAL-FORMING APPARATUS

Nils Bardahl, Erlangen, and Friedrich Gotz, Bubenreuth b. Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 17, 1967, Ser. No. 609,889
Int. Cl. B01k *3/00*; B23p *1/02*
U.S. Cl. 204—228 3 Claims



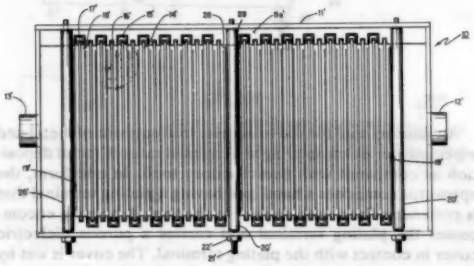
A device for limiting the short-circuit current between tool and workpiece of an electrolytic metal-forming machine in which an electrolyte is kept flowing through the gap between the workpiece and a shaped tool whose particular shape is to be imparted in a negative manner upon the workpiece. The tool and workpiece are connected to an alternating-current supply through an alternating-current controller and a rectifier in series with a smoothing reactor. A voltage sensing member is connected across the electrolyte gap between tool and workpiece in order to respond to a slight departure of the gap voltage from the rated operating voltage. When responding, the sensing member causes the alternating-current controller to block the further supply of alternating current and simultaneously releases a normally open power-current switch likewise connected across the electrolyte gap.

3,779,889

ELECTROLYTIC CELL FOR THE MANUFACTURE OF OXYHALOGENS

Richard E. Loftfield, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 7, 1972, Ser. No. 241,967
Int. Cl. B01k *3/04*
U.S. Cl. 204—268 14 Claims



An electrolytic cell for generation of sodium hypochlorite and other products comprising a cell chamber and plurality of vertical spaced parallel electrically insulating partitions dividing said chamber into individual compartments, monopolar electrodes in the first and last compartments of the group, bipolar electrodes constructed of two spaced parallel straight segments closed at one end intermediate the terminal electrodes, positioned with the straight elements of the electrodes on opposite sides of each partition and with the closed end of adjacent electrodes on opposed lateral edges of adjacent partitions, and means for applying a decomposition electrical potential between the terminal electrodes in the first and last compartments, respectively. Means are provided for creating electrolyte flow in a side-to-side or top-to-bottom manner in each compartment as the electrolyte flows through the chamber. Alkali metal hypochlorite and other chemical compounds are produced by electrolyzing alkali metal halide and other electrolyte solutions which form a gas at the electrode surfaces during electrolysis of the solutions.

3,779,890

PLATING BOXES FOR HOLDING A STACK OF SEMI-CYLINDRICAL BEARING LINERS DURING PLATING

Clifford Edward Witney, Reading, Berkshire, and Charles William Stratford Present, Berkshire, both of England, assignors to Vandervell Products Limited, Berkshire, England

Filed Apr. 17, 1972, Ser. No. 244,483
Claims priority, application Great Britain, Apr. 20, 1971, 10,252/71; Apr. 29, 1971, 12,094/71; Aug. 9, 1971, 37,314/71
Int. Cl. C23b *5/70*
U.S. Cl. 204—297 R 9 Claims

The disclosure relates to a plating box for holding a stack of bearing liners during plating. The box has a removable front wall with an elongate slot through which ions can pass. The box contains supports for a stack of liners to hold the stack with the parting faces of the liners against the front wall symmetrically on either side of the slot. A spring loaded presser holds the front wall against the parting faces of the liners.

3,779,891

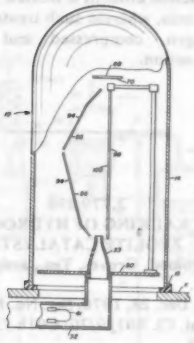
TRIODE SPUTTERING APPARATUS

Bertalan J. Vegh, and Alfred E. Coates, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 817,635, April 21, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,585
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 2 Claims

A triode sputtering apparatus to deposit material on the surface of an article. The apparatus comprises an enclosure means for evacuating the enclosure, a means for establishing an ion plasma in the enclosure. An ion target, including two members with surfaces of the material to be sputtered, is located in the enclosure with the surfaces facing the ion plasma. The target members are electrically biased so that ions from the plasma will impinge on their surfaces and sputter material therefrom. An article having a surface to be coated is mounted in the enclosure so that the surface faces the ion plasma and the sputtering surfaces of the target which are at

an acute angle to the surface of the article. An electron funnel is used to funnel electrons being supplied to the plasma between the article and the target and an elongated anode is



used to attract electrons from the plasma. The apparatus may be used to coat 11 by 11 inch glass plates with a metallic layer having substantially uniform optical density.

3,779,892

ELECTRONIC MEASUREMENT OF END POINT OF ASPHALT OXIDATION

Eric O. Forster, Scotch Plains; Alan D. Goldshine, West Orange, and Albert Gathman, Belmar, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 9,486, Feb. 9, 1970. This application July 12, 1972, Ser. No. 271,036

Int. Cl. C10g *1/00*

U.S. Cl. 208—6 **2 Claims**

An electronic measuring technique for use in determining the end point of a process, such as an air blowing process employed in the manufacture of asphalt by means of an electronic bridge circuit, a device for monitoring continuously certain electrical properties of the actual product, and a reference standard which simulates the preselected desired electrical properties of the product, such as oxidized asphalt, being manufactured. As the process progresses the difference between the sensed electrical properties of the actual product and those simulated by the reference standard decreases and becomes zero or nearly zero at the end point. When the difference is zero, provision is made for the process to be stopped automatically or manually, whereupon the product is transferred to its respective storage area.

3,779,893

PRODUCTION OF DESULFURIZED LIQUIDS AND GASES FROM COAL

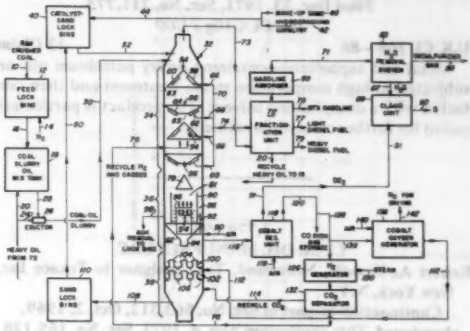
Lawrence E. Leas, Simi, Calif.; Robert L. Leas, and Cecil J. Johnson, both of Columbia City, Ind., assignors to Leas Brothers Development Corporation, Columbia City, Ind.

Filed Mar. 21, 1972, Ser. No. 236,643

Int. Cl. C10g *1/08*

U.S. Cl. 208—10 **6 Claims**

An integrated process for simultaneously recovering liquid and gaseous products from coal. A slurry is formed from crushed coal and recycled oil and is introduced to a three-zone reactor along with a hydrocracking catalyst and sand, the latter of which acts as a conveying medium. In the first zone, coal liquids are extracted and conveyed to a fractionation unit. In the second zone, the carbon coked on the solids is gasified with air creating a producer gas which flows upwardly countercurrent to the downward flow of the aforementioned mixture and supplying heat for the extraction stage. In the



third stage, the remaining carbon is gasified with oxygen and carbon dioxide to a substantially nitrogen-free carbon monoxide. The carbon monoxide is desulfurized in a metal oxide bed.

3,779,894

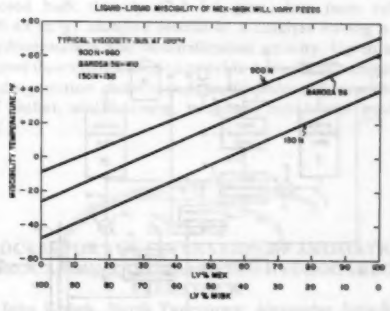
IMMISCIBLE INJECTION OF SOLVENT IN DILUTION CHILLING OF WAXY OILS

John F. Eagen, and David A. Gudelis, both of Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 60,252, Aug. 3, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,405

Int. Cl. C10g *43/08*

U.S. Cl. 208—33 **17 Claims**



A dewaxing process is described comprising contacting a waxy lubricating oil with a dewaxing solvent in a chilling zone divided into a plurality of stages. The dewaxing solvent is injected into the chilling zone under conditions such that the solvent and oil are immiscible at the point of injection. At least a portion of the wax is precipitated from the oil and is separated therefrom under conditions such that the solvent and oil are miscible. Solvent injection is at a temperature preferably below 0°F. when the solvent comprises 40 volume percent methylethylketone and 60 volume percent methylisobutylketone.

3,779,895

TREATMENT OF HEAVY PETROLEUM OILS

Raymond F. Wilson, and Edward L. Cole, both of Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,773
Int. Cl. C10g *21/00*
U.S. Cl. 208—86 12 Claims

Metal and asphaltene-containing heavy petroleum oils are subjected to high temperature steam treatment and then contacted with a deasphalting solvent. The product is particularly suited for further catalytic treatment.

3,779,896

LUBE OIL MANUFACTURE

Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 863,312, Oct. 2, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 169,128
Int. Cl. C10g *37/00*
U.S. Cl. 208—86 7 Claims

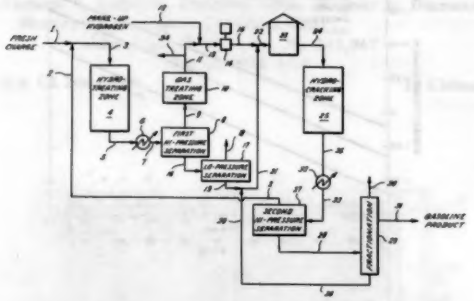
Lubricating oils are prepared by subjecting a residuum containing petroleum fraction to simultaneous deasphalting-solvent refining using a solvent, e.g., furfural or N-methyl-2-pyrrolidone. The resulting raffinate is hydrocracked and then dewaxed. N-methyl-2-pyrrolidone is superior to furfural as a deasphalting-solvent refining agent because of its greater thermal stability and solvent capacity.

3,779,897

HYDROTREATING-HYDROCRACKING PROCESS FOR MANUFACTURING GASOLINE RANGE HYDROCARBONS

Richard E. Wrench, Houston, and Benjamin F. Smith, Jr., Groves, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,643
Int. Cl. C10g *23/00*
U.S. Cl. 208—89 2 Claims



A process for converting sulfur and nitrogen containing hydrocarbons boiling in the 400°–1,000° F. range into gasoline range hydrocarbons boiling below about 400° F. which comprises hydrotreating the sulfur and nitrogen containing hydrocarbons to yield a liquid hydrocarbon product containing less than 1 ppm nitrogen, and hydrocracking such hydrotreated hydrocarbon to yield gasoline boiling range product. The hydrotreating reaction is improved by employing pressures in the range of from about 1,200–1,500 psig and hydrogen to hydrocarbon ratios in the range of 10,000–20,000 SCF/B. By operating the hydrocracking reaction at a higher pressure than the hydrotreating reaction only one hydrogen circulation system is required wherein a hydrogen recycle gas is from the hydrocracking reaction effluent is charged to the hydrotreating reaction, wherein a gas stream comprising hydrogen, hydrogen sulfide and ammonia separated from the hydrotreating reaction effluent is treated to remove hydrogen sulfide and ammonia, wherein such treated gas is mixed with make-up hydrogen, compressed and recycled to the hydrocracking reaction.

3,779,898

CATALYTIC CRACKING OF HYDROCARBONS WITH ZEOLITE CATALYSTS

Douglas J. Youngblood, Groves, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 102,245
Int. Cl. B01j *9/20*; C01b *33/28*
U.S. Cl. 208—120 6 Claims

Significant improvements in catalyst activity and selectivity are achieved in the catalytic cracking of hydrocarbons with catalysts of the zeolite type when the ratio of fresh catalyst addition to catalyst loss is maintained above 1.5 and the catalyst is heat treated at between 1,300° and 1,600° F. for between 5 minutes and 24 hours. The heat treatment is performed on either the fresh catalyst being added or on the combined mixture of fresh catalyst and equilibrium catalyst. Increases in Texaco D + L activity of between 1 and 10 may be achieved with concomitant increases in naphtha selectivity with naphtha yield at constant conversion being increased as much as 5 volume percent.

3,779,899

HYDROGENATION OF AROMATIC HYDROCARBONS

David E. Mears, 212 Lido Pl., Fullerton, Calif.

Filed May 3, 1971, Ser. No. 139,924
Int. Cl. C10g *23/04*
U.S. Cl. 208—143 5 Claims

Aromatic hydrocarbons, particularly monocyclic hydrocarbons, are hydrogenated without substantial hydrocracking in the presence of a catalyst prepared by impregnating or ion-exchanging platinum onto a previously stabilized Y zeolite base, followed by drying and calcining at temperatures above 1,000° F. The final, high-temperature calcination gives markedly improved hydrogenation activity as compared to calcination at lower temperatures.

3,779,900

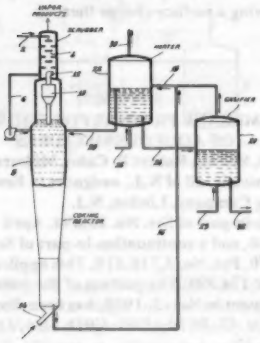
PROCESS FOR FLUID COKING AND COKE GASIFICATION IN AN INTEGRATED SYSTEM

Byron V. Molstedt, Baton Rouge, La., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Nov. 30, 1971, Ser. No. 205,775
Int. Cl. C10g *9/32*
U.S. Cl. 208—127 6 Claims

A method is provided for fluid coking and coke gasification in an integrated system. High temperature gases with entrained solids are delivered to a heating zone from the gasifier without the use of a cyclone, and mixed with either circulating

coke from the reactor zone in a preferred embodiment, or with circulating coke from the heater zone in an alternative



embodiment. The relatively cooler gaseous heater zone effluent is treated to separate gases and entrained solids.

3,779,901

HYDROTREATING OF HYDROCARBONS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 64,643, Aug. 17, 1973, which is a division of Ser. Nos. 839,643, July 7, 1969, Pat. No. 3,607,727, which is a continuation-in-part of Ser. No. 828,762, May 28, 1969, Pat. No. 3,578,584. This application June 12, 1972, Ser. No. 261,892

Int. Cl. C10g *23/02*

U.S. Cl. 208—143 5 Claims

A process for hydrotreating hydrocarbons and mixtures of hydrocarbons utilizing a catalytic composite of a porous carrier material, a Group VIII noble metal component and a germanium component. Applicable to charge stocks containing sulfurous compounds and aromatic hydrocarbons, the hdrotreating conditions can be controlled to effect a particular end result including the ring-opening of cyclic hydrocarbons, desulfurization, denitrification, selective olefin saturation, etc.

3,779,902

PREPARATION OF MINERAL FREE ASPHALTENES

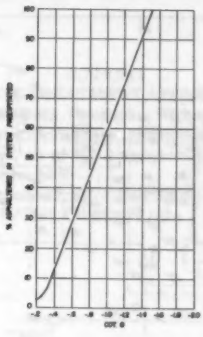
David L. Mitchell, and James G. Speight, both of Edmonton, Alberta, Canada, assignors to Canada Cities Service, Ltd.; Imperial Oil Limited; Atlantic Richfield Canada Limited and Gulf Oil Canada Limited; part interest to each

Filed May 21, 1971, Ser. No. 145,662

Int. Cl. C10g *21/00*

U.S. Cl. 208—251 7 Claims

Disclosed herein is an invention directed to a method of deasphalting in which a desired amount of asphalt is removed by adjusting the solvent power of the solvent-feed system to obtain a desired cotangent theta for the system. Also disclosed



is the application of the cotangent theta principle to two-stage deasphalting of Athabasca bitumen.

3,779,903

HYDROCONVERSION PROCESS WITH A CATALYST HAVING A HYDROGENATION COMPONENT COMPOSITED WITH A HIGH DENSITY ALUMINA

Gerald S. Levinson, San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 689,342, Dec. 11, 1967, abandoned, Division of Ser. No. 36,721, May 13, 1970, Pat. No. 3,673,112. This application Jan. 21, 1972, Ser. No. 219,790

Int. Cl. C10g *23/02*

U.S. Cl. 208—254 H 5 Claims

Incorporation of 30–65 percent w of a hydrogenation metal component into a hydrogel which would yield on drying and calcining without the hydrogenation metals a xerogel of a high compacted bulk density (0.8–1.6 g/cc) low pore volume (0.15–0.45 cc/g) alumina results in a catalyst having a very high hydrogenation and denitrification activity. Up to about 10 percent fluoride is added to provide a cracking component. The hydrogenation metal component is selected from the oxides of nickel, molybdenum, tungsten, cobalt and mixtures thereof.

3,779,904

PROCESS FOR THE SEPARATION OF AROMATIC HYDROCARBONS FROM A MIXED HYDROCARBON FEEDSTOCK

Daniel John Kubek, North Tarrytown; Alexander Jean-Marie Kosseim, Yorktown Heights, and George Solomon Somekh, New Rochelle, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

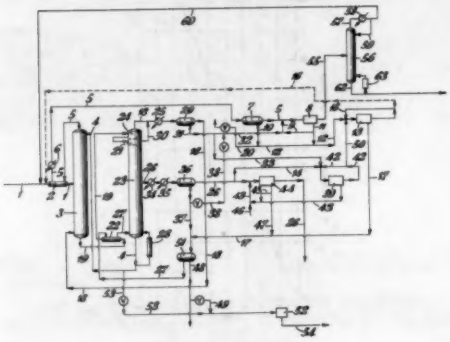
Filed Dec. 21, 1971, Ser. No. 210,404

Int. Cl. C10g *21/16;* C07c *7/10*

U.S. Cl. 208—333 16 Claims

The process involves a combination of continuous solvent extraction-steam distillation for the recovery of aromatic hydrocarbons from a mixed feedstock. The feedstock is contacted with a solvent-water mixture at temperatures in the range of about 75° to 200°C and the extract and raffinate streams are separated into their components. The purity of the aromatics recovered from the extract is improved by introducing light aliphatic hydrocarbons consisting essentially of

aliphatic and cycloaliphatic hydrocarbons of no more than five carbon atoms with the feedstock at the middle theoretical



stage of the extraction column. The light aliphatics are introduced in amounts in the range of 5 to 12 percent, based on the weight of the feedstock.

3,779,905

ADDING CORROSION INHIBITOR TO TOP OF CRUDE OIL STILL

Russell F. Stedman, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 20, 1971, Ser. No. 182,182
Int. Cl. C10g *7/00*
U.S. Cl. 208—348 **6 Claims**

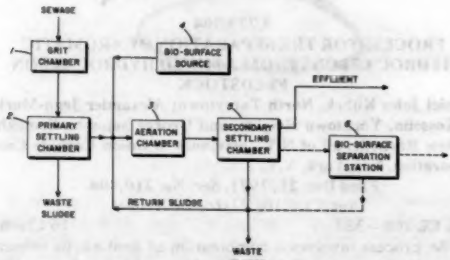
Avoiding corrosion by HCl of overhead condensing equipment from a crude column by injecting an amine containing at least 7 carbon atoms into the reflux being returned to the upper portion of the crude column. An amine hydrochloride is formed which is non-volatile and hydrocarbon soluble. Accordingly, it will be withdrawn from a lower section of the column and will not pass overhead into the communicating condensing equipment.

3,779,906

PLASTIC MOVING-SURFACE TREATMENT OF SEWAGE

Gilbert V. Levin, Chevy Chase, Md., assignor to Biospherics Incorporated, Rockville, Md.

Continuation-in-part of Ser. No. 2,496, Jan. 13, 1970, abandoned. This application Aug. 3, 1972, Ser. No. 277,504
Int. Cl. C02c *1/06*
U.S. Cl. 210—7 **11 Claims**



A process for the aerobic treatment of sewage. Raw sewage or the liquid portion of primary settled sewage and the sludge portion of secondary settled sewage are simultaneously aerated in the presence of a plurality of bio-surfaces - a bio-surface being a body capable of attracting and offering surface area for the growth of sewage treating microorganisms and also attracting the nutrients necessary for the growth of these microorganisms and the sewage organic materials to be degraded by the treatment process. The bio-surfaces, therefore, form favorable microenvironments where the microorganisms, their life-sustaining nutrients and organic matter in the sewage are brought together in concentrated fashion which promotes the capacity and rate of sewage treatment. The bio-surfaces comprise synthetic plastic surfaces preferably having a surface charge thereon.

3,779,907

LIQUID MEMBRANE PROCESS FOR THE SEPARATION OF AQUEOUS MIXTURES

Norman N. Li, Edison; Robert P. Cahn, Milburn, and Adam L. Shrier, Montclair, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 28,094, April 13, 1970, Pat. No. 3,617,546, and a continuation-in-part of Ser. No. 99,267, Dec. 17, 1970, Pat. No. 3,710,519. This application Aug. 25, 1971, Ser. No. 174,990. The portion of the term of this patent subsequent to Nov. 2, 1988, has been disclaimed.
Int. Cl. B01d *13/00*; **C02b** *1/46, 1/60*
U.S. Cl. 210—22 **22 Claims**

This invention relates to a process for the removal of dissolved species from aqueous solutions, which comprises contacting said aqueous solution with an emulsion, said emulsion comprising an exterior phase which is characterized as being immiscible with said aqueous solution and yet permeable to said dissolved species, and an interior phase which contains a reactant capable of converting said dissolved species to a nonpermeable form. The dissolved species permeate the exterior phase, into the interior phase where they are converted into nonpermeable forms and thus retained in the interior phase of said emulsion. The aqueous solution, depleted in said dissolved species, is separated from said emulsion and the emulsion cycled for reuse. In one preferred embodiment said dissolved species are ions, and an ion exchange compound is incorporated in the exterior phase of the emulsion, to promote the permeation of said ions through the exterior phase.

3,779,908

COALESCENCE OF WATER AND OLEOPHILIC LIQUID DISPERSIONS BY PASSAGE THROUGH A PERMEABLE, OLEOPHILIC LIQUID EQUILIBRATED, FOAM OF POLYURETHANE

Mercer Duane Gregory, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of Ser. No. 235,846, March 17, 1972, abandoned. This application Mar. 19, 1973, Ser. No. 342,347
Int. Cl. B01d *17/04*
U.S. Cl. 210—23 **5 Claims**

Dispersions of an oleophilic liquid and water are coalesced by passing through a permeable, non-fibrous, consolidated bed of a poiyurethane foam which is equilibrated with respect to sorption of the oleophilic liquid.

3,779,909

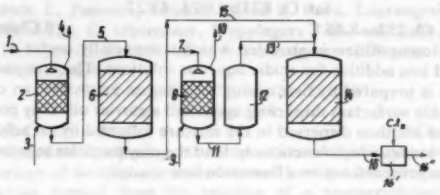
METHOD OF AND APPARATUS FOR THE PURIFICATION OF WATER CONTAINING ORGANIC CONTAMINANTS

Werner Wisfeld, Frankfurt Am Main; Hans Wirth, Dortelweil; Walter Lotz, and Alfred Kratz, both of Frankfurt Am Main, all of Germany, assignors to Laboratorium Fur Adsorptionstechnik GmbH, Frankfurt/Main, Germany

Filed July 22, 1971, Ser. No. 165,281
Claims priority, application Germany, Oct. 10, 1970, P 20 49 919.8
Int. Cl. C02b *1/14, 1/36*
U.S. Cl. 210—29 **8 Claims**

Water containing organic contaminants is treated with an oxygen-containing gas and thereafter passed through a biolog-

ically effective active-carbon stage divided into at least two activated-carbon beds for biodegradation of the microorganisms in the raw water. Between these beds at least a major proportion of the water emerging from the first bed is treated with ozone before entering the next bed. The two beds constitute a



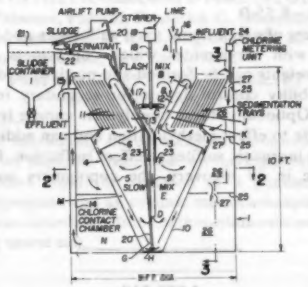
biological purification stage from which the effluent may be passed to an adsorption stage in which activated carbon is used to remove residual organic impurities by contact absorption. The final effluent is chlorinated with at least 0.05 mg/liter chlorine or treated with an equivalent quantity of another disinfectant.

3,779,910

LIQUID TREATMENT PLANT AND PROCESS, PARTICULARLY FOR WASTE WATER

James E. Chatfield, Beaconsfield, Quebec, Canada, assignor to Canadair Limited, St. Laurent, Montreal, Quebec, Canada

Filed Feb. 14, 1972, Ser. No. 225,937
Claims priority, application Canada, Apr. 13, 1971, 110150
Int. Cl. B01d *21/16*
U.S. Cl. 210—49 **4 Claims**



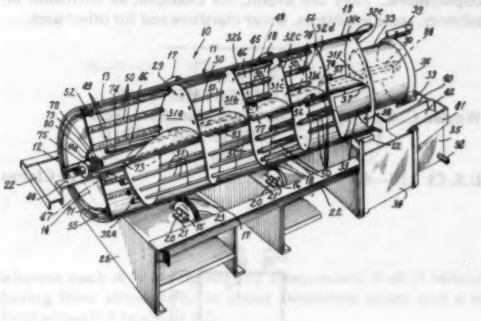
A treatment process and plant particularly adapted to be embodied in a compact package unit designed in particular to efficiently remove phosphorus and other pollutants from waste water. A treatment process wherein lime or other chemical coagulant is intimately mixed with an influent solution to coagulate the solute and to flocculate the suspended particles into a flocculation chamber wherein the mixture is subjected to raising through a field of suspended particles and to reseeding with deposited particles to encourage the flocculation. Thereafter, the mixture is caused to pass through curtains of falling floc and between sedimentation trays to deposit the particles. The unit is constructed and arranged to produce gravity flow serially and at predetermined individual velocities through the successive stages of the process to optimize the flocculation and deposition conditions therein.

3,779,911

WASTE TREATMENT APPARATUS

Hugo D. Freudenthal, Wantagh; Richard E. Townsend, Huntington; Peter K. Zawoiski, North Babylon, and Edward Schatz, Setauket, all of N.Y., assignors to Fairchild Industries, Germantown, Md.

Filed July 12, 1971, Ser. No. 161,608
Int. Cl. B01d *21/24*
U.S. Cl. 210—60 **8 Claims**



A waste treatment apparatus which includes a rotatable drum having an inlet at one end to receive the waste sewage to be treated within the drum and outlets for the treated waste at the opposite end. The rotatable waste treatment drum is inclined in a stationary frame so that the waste sewage will flow from the inlet toward the outlet during the treatment cycle, under the influence of gravity while being exposed to separate treatment stages in batches, separated within the drum by a helical member. The helical member is sealingly connected to the interior wall of the rotatable drum and to an axial hollow core member and forms a plurality of variably spaced convolutions that are formed about the axial hollow core member so that as the drum rotates the batches of waste sewage disposed in the lower segment of the drum between the convolutions of the helical member, are successively raised to a higher level as the drum is rotated and the waste is undergoing treatment. Clarified liquid effluent is removed during the treatment cycle through the hollow core member and part of the treated liquid effluent containing active microorganisms is introduced to the untreated waste entering the inlet end of the drum. Rotation of the drum and selective aeration of the waste sewage is controlled by a control system associated with the rotatable drum and the control system has chemical sensing and dispensing apparatus that sense the chemical concentrations or pH of the wastes being treated and add chemicals to the wastes when needed. The wastes are treated to produce a clarified liquid effluent and a sludge that are automatically separated and collected in separate containers and may be safely put to a useful purpose such as the replenishment of a water supply and use as a fertilizer. The treated and collected sludge is also dried so that it will be readily usable as a nutrient or fertilizer, or can be stored as an innocuous material.

3,779,912

WATER CLARIFICATION PROCESS USING SILICON-CONTAINING AMINOMETHYL PHOSPHONATES

Derek Redmore, Ballwin, and Frederick T. Welge, Webster Groves, both of Mo., assignors to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 80,124, Oct. 12, 1970, Pat. No. 3,716,569. This application Oct. 2, 1972, Ser. No. 294,491

Int. Cl. C02b *1/20*

U.S. Cl. 210—54 5 Claims

Silicon-containing aminomethyl, or substituted aminomethyl, phosphonic acids and derivatives thereof. The silicon atom is silicone functional (i.e., has a -SiO- group) and is also attached to an alkyleneamino group which may have one or more amino groups (i.e., an alkylene-amin group having at least one N-H group) capable of reacting with a carbonyl compound (i.e., aldehyde or ketone) and phosphorous acid, or a derivative thereof, to form aminomethyl phosphonic acid. All, or less than all, of the N-H groups may be converted to aminomethyl phosphonic acids. The silicon-aminomethyl phosphonic acids may be monomeric, polymeric, or copolymeric. They are useful, for example, as corrosion inhibitors, scale inhibitors, water clarifiers and for other uses.

3,779,913

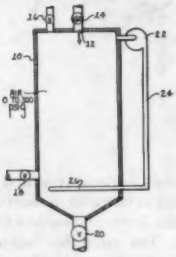
WATER TREATMENT

Waylan C. Martin, P.O. Box 1468, Monahans, Tex.

Filed June 6, 1972, Ser. No. 260,316

Int. Cl. C02b *1/28*

U.S. Cl. 210—63 13 Claims



To oxidate materials in water, a chamber is filled with air. Thereafter, raw water is pumped in, thus, compressing the air. Then the air from the top of the vessel is pumped to an air diffusion plate at the bottom. The operation is continued as a batch operation for the desired length of time and, thereafter, the treated water removed from the chamber.

3,779,914

COMPOSITION OF IMPROVED VISCOSITY CONTROL AND METHOD OF USE

Kenneth H. Nimerick, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 666,853, Sept. 11, 1967, abandoned. This application May 20, 1971, Ser. No. 145,495

Int. Cl. E21b *43/26*

U.S. Cl. 252—8.55 R 10 Claims

An aqueous composition is provided which can be employed as a fracturing fluid, to suspend particulate solids or the like. The composition can be formulated to have a certain initial viscosity value which will decrease after a certain period of time to a value below the initial viscosity value. The composition comprises, water, a water soluble organic polymer as a viscosity increasing agent and as a breaker a hydrazine or hydroxylamine compound or a mixture of such compounds.

3,779,915

ACID COMPOSITION AND USE THEREOF IN TREATING FLUID-BEARING GEOLOGIC FORMATIONS

Clare H. Kucera, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 138,775, April 29, 1971, abandoned, and a continuation-in-part of Ser. No. 701,821, Jan. 31, 1968, abandoned. This application Sept. 21, 1972, Ser. No. 290,888

Int. Cl. E21b *43/26, 43/27*

U.S. Cl. 252—8.55 C 8 Claims

A composition is provided which is especially useful as a fluid loss additive for acidic aqueous solutions. The composition is prepared by first mixing together an emulsifier, an oil soluble surfactant dispersing agent and a carrier oil. Clay particles are then dispersed in the mixture followed by an adhesive binder which functions to bind the clay particles together when screened out on a formation face.

3,779,916

ACIDIZING COMPOSITION

Curtis W. Crowe, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 4, 1971, Ser. No. 195,847

Int. Cl. E21b *43/27*

U.S. Cl. 252—8.55 C 3 Claims

An acid-in-oil emulsion having a greatly enhanced retardation rate is prepared by employing in the emulsion a mixture of an effective amount of an oil wetting surfactant, e.g., a saturated hydrocarbon sulfonate, and an emulsifier, e.g., an alkylaryl sulfonic acid or water soluble salt thereof.

3,779,917

OIL RECOVERY WITH VINYL SULFONIC ACID-ACRYLAMIDE COPOLYMERS

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 26, 1971, Ser. No. 209,479

Int. Cl. E21b *43/20*

U.S. Cl. 252—8.55 D 10 Claims

Copolymers of alkali metal vinyl sulfonates and their alkyl derivatives with acrylamides which copolymers have high molecular weights can be formed and partially hydrolyzed to provide mobility control agents for secondary recovery of petroleum. Optionally, these copolymers can be treated with formaldehyde to effect methylolation and can additionally be treated with inorganic sulfites to effect sulfitation. Preferably, prior to use in oil recovery, the copolymers are partially hydrolyzed.

3,779,918

LUBRICANT-CONTAINING POLYMERIC SYNTHETIC RESIN COMPOSITION

Hiroshi Ikeda, and Takao Kawakita, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Higashi-ku, Osaka, Japan

Filed May 5, 1969, Ser. No. 821,626

Claims priority, application Japan, May 4, 1968, 43-29634; Sept. 9, 1968, 43-64345

Int. Cl. C10m *7/30, 7/26*

U.S. Cl. 252—12.6 14 Claims

An oil-containing or lubricant-containing molded plastic composition comprising a lubricant adsorbent carrier having a surface area of at least 0.01 m^2/g, and being selected from the group consisting of a non-fusible naturally occurring inorganic powder, a synthetic high molecular weight material, a natu-

rally occurring high molecular weight material, and mixtures thereof in admixture with a lubricant, said carrier being blended with a base plastic material selected from the group consisting of a synthetic resin and a mixture of at least two synthetic resins is disclosed.

3,779,919

SYNTHETIC AIRCRAFT TURBINE OIL

Edwin L. Patmore, Fishkill; David D. Reed, Lagrangeville; Frederick G. Oberender, Wappingers Falls, and John W. Nebzydoski, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,181
Int. Cl. C10m *1/38, 1/32*
U.S. Cl. 252—33.6 **10 Claims**

Synthetic lubricating oil composition comprising a major portion of an aliphatic ester-base oil having lubricating properties formed from the reaction of a pentaerythritol or trimethylolpropane and an organic monocarboxylic acid containing an amine salt of a substituted rhodanine.

3,779,920

LUBRICATING OIL COMPOSITION

Donald L. Devries, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Feb. 5, 1971, Ser. No. 113,041
Int. Cl. C10m *1/32, 1/40*
U.S. Cl. 252—33.4 **32 Claims**

The incorporation of at least one of certain nitrogen-oxygen containing compounds into lubricating oil compositions comprising mineral oil of lubricating viscosity and at least one alkali metal and/or alkaline earth metal carbonate overbased sulfonate and/or phenate improves the wear properties of the lubricating composition toward metals, in particular silver. These lubricating oil compositions may be used by maintaining a lubricating amount of the composition on the components of an internal combustion engine, in particular a railroad diesel engine having silver components, requiring lubrication.

3,779,921

SYNTHETIC AIRCRAFT TURBINE OIL

Edwin L. Patmore, Fishkill; Frederick G. Oberender, Wappingers Falls, and David D. Reed, Lagrangeville, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,182
Int. Cl. C10m *1/38, 1/32*
U.S. Cl. 252—33.6 **10 Claims**

Synthetic lubricating oil composition comprising a major portion of an aliphatic ester-base oil having lubricating properties formed from the reaction of a pentaerythritol or trimethylolpropane and an organic monocarboxylic acid containing a thio-oxazolidinedione, a thiazolidinedione or the corresponding amine salt.

3,779,922

BARIUM-CONTAINING DISPERSIONS AND PROCESS

William M. LeSuer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 118,489, Feb. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 864,894, Oct. 8, 1969, abandoned, Continuation-in-part of Ser. No. 681,028, Nov. 6, 1967, Pat. No. 3,515,669, said Ser. No. 118,489, is a continuation-in-part of Ser. No. 64,632, Aug. 17, 1970, abandoned, which is a division of Ser. No. 864,894, Oct. 8, 1969, abandoned. This application June 19, 1972, Ser. No. 264,095
Int. Cl. C10m *1/32, 3/26*
U.S. Cl. 252—34.7 **3 Claims**

Process for preparing barium-containing dispersions in essentially inert diluents by contacting a basically reacting barium compound with carbon dioxide in the presence of a stabilizing agent and promoter. A typical process comprises carbonating a mixture of barium hydroxide monohydrate, heptyl phenol, and the reaction product of polyisobutenyl-substituted-succinic anhydride and an alkylene polyamine. The barium-containing dispersions thus produced are useful as additives for fuels and lubricants.

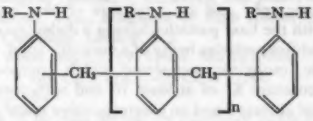
3,779,923

ALKYLATED METHYLENEDIANILINE TARS

Robert Archie Gardiner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 20, 1972, Ser. No. 219,526
Int. Cl. C10m *1/34*
U.S. Cl. 252—50 **5 Claims**

Alkylated methylenedianiline tars having the formula



wherein each R is independently a secondary 2-alkyl radical having from about three to about 10 carbon atoms and *n* is from about 0.7 to about 1.2.

3,779,924

PROCESS FOR PREPARING ELECTROPHOTOGRAPHIC LIQUID DEVELOPING COMPOSITIONS

Jonas J. Chechak, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,519
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **16 Claims**

An electrophotographic liquid developer may be prepared by admixture of a dye and a mordant therefor in the presence of (1) a suitable binder, (2) a solvent for the binder and (3) a liquid precipitation medium; the solvent for the binder is substantially removed; and the resultant dope is added to a suitable liquid carrier to form a dispersion of finely divided toner particles in the liquid carrier. The toner particles thus formed contain a dye-mordant salt precipitate dispersed in the binder.

3,779,925

PIEZOELECTRIC CERAMIC COMPOSITIONS

Hiromu Ouchi; Masamitusu Nishida, and Katsuo Nagano, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Oct. 8, 1971, Ser. No. 187,850
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 **11 Claims**

Piezoelectric ceramic compositions having high mechanical strength, high electrical breakdown strength, high coercive force, high electromechanical coupling coefficient and high

mechanical quality factor, and comprising the solid solution in the system

PbO—54.8–50.1 mol %
MnO_2—9.3–0.2 mol %
Nb_2O_5—7.3–0.2 mol %
Li_2O—3.8–0.1 mol %
TiO_2—24.8–14.8 mol %
ZrO_2—26.8–14.8 mol %

and Nb_2O_5/Li_2O mol ratio is a value selected from the range $4.0000 \geqq Nb_2O_5/Li_2O \geqq 3.1428$ and $2.8636 \geqq Nb_2O_5/Li_2O \geqq 1.8421$.

3,779,926

TONERS AND PROCESS FOR PREPARING SAME

John W. Merck, Tyrone, Pa., and John D. Nixon, Annapolis, Md., assignors to SCM Corporation, New York, N.Y.

Continuation of Ser. No. 633,642, Feb. 23, 1967, abandoned, which is a continuation of Ser. Nos. 447,758, April 13, 1965, abandoned, and Ser. No. 447,759, April 13, 1965, abandoned. This application Oct. 3, 1969, Ser. No. 866,080

Int. Cl. G03g 9/00

U.S. Cl. 252—62.1 **8 Claims**

The compositions (toners) are useful in electrostatic printing and xerography and are a mixture of base and modifier particles with the base particles having a dielectric constant K and the modifier particles being of a normally solid, inert, nonhygroscopic, inorganic compound which compound has a dielectric constant K′ of at least 10 and sufficient to give a K′/K ratio of at least 2 and an electropositive metal containing moiety chemically associated with an electronegative moiety. The metal of the electropositive moiety has a work function of up to about 2.5 electron volts. The toner has a charge/mass ratio at least about 50 percent greater than that of the base particles in their unmodified state.

3,779,927

HEAT TRANSFER AGENT COMPOSITION

Edward R. Howell, Freeport; Harold B. Wood, Jr., Lake Jackson, both of Tex., and Richard S. Sayad, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 766,979, Oct. 11, 1968, abandoned. This application Apr. 26, 1971, Ser. No. 137,589

Int. Cl. C09k 3/02

U.S. Cl. 252—75 **12 Claims**

Amine-initiated copolymers of ethylene oxide and propylene oxide containing a small but effective amount of an alkaline pH buffering agent are effective heat transfer agents in the removal of excess solder from electronic circuit boards.

3,779,928

AUTOMATIC TRANSMISSION FLUID

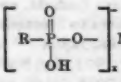
Raymond C. Schlicht, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,410

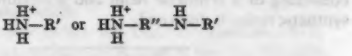
Int. Cl. C09k 3/00

U.S. Cl. 252—75 **9 Claims**

Automatic transmission fluid comprising at least 86 weight percent of a mineral lubricating oil and 0.01 to 5.0 weight percent of an alkanephosphonic acid salt represented by the formula:



in which R is a straight chain or predominantly straight chain aliphatic radical having from about 11 to 40 carbon atoms, M is zinc, calcium or an alkyl ammonium radical having the formula:



in which R″ is a polymethylene radical having from two to four carbon atoms, R′ is an alkyl radical having from six to 20 carbon atoms and x is 1 or 2 equal to the valence of M, and a method for operating an automatic transmission.

3,779,929

CLEANING COMPOSITION

Roger L. Abler, White Bear Lake, and Gary A. Gardner, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 23, 1972, Ser. No. 228,755

Int. Cl. C11d 17/04

U.S. Cl. 252—90 **9 Claims**

Cleaning compositions based upon higher fatty alcohol detergents such as sodium lauryl sulfate and having particular utility for removing soil and stains from carpets, upholstery, etc., and for imparting stain resistance to the cleaned surface are improved by the addition of certain anionic surfactants without which the compositions could cause respiratory irritation to an unprotected user, especially in unventilated closed areas.

3,779,930

FLUIDS

Percival George Ernest Alcorn, Hawthorn, and Keith Gordon Neill, Kew, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

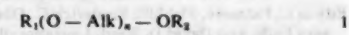
Filed May 26, 1971, Ser. No. 147,231

Claims priority, application Australia, Oct. 9, 1970, 1507/70; Oct. 9, 1970, 2813/70

Int. Cl. C09k 3/00; C10m

U.S. Cl. 252—77 **4 Claims**

New compositions of use as hydraulic fluids comprising a compound of general formula I:



wherein Alk is an alkylene or aralkylene group containing from 1 to 9 inclusive carbon atoms in a straight or branched chain, R_1 and R_2, separately, is an alkyl, substituted alkyl or aralkyl group containing from 1 to 10 inclusive carbon atoms in a straight or branched chain and n is an integer from 1 to 10 inclusive, said compound having a viscosity at −40° C. of less than 1800 centistokes; and at least one additive.

3,779,931

COMPOSITIONS USEFUL IN THE AQUEOUS COLD-BLEACHING OF TEXTILES INCLUDING OPTICAL BRIGHTENERS

Walter Fries, Erkrath-Unterbach; Helmut Bloching, Monheim-Baumberg; Hilden Rhld, Monheim-Baumberg, and Dieter Jung, Monheim-Baumberg, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed Sept. 27, 1971, Ser. No. 184,213

Claims priority, application Germany, Dec. 10, 1970, 2060762; July 12, 1971, 2134691

Int. Cl. C11d 7/54

U.S. Cl. 252—99 **8 Claims**

Compositions useful in the aqueous cold-bleaching of textiles comprising (1) from 3 to 100 percent by weight of a bleaching component comprising (a) from 95 to 99.99 percent by weight of a mixture of (i) a percompound yielding H_2O_2 in aqueous solution and (ii) an activator for active ox-

ygen selected from the group consisting of N-acyl and O-acyl compounds having 2 to 9 carbon atoms in the acyl, said activator having an activating action of at least 3 in the Per-Acid Formation Test, said percompound and said activator being present in such ratio that from 0.01 to 4 mols of said activator are present for each gram-atom of active oxygen in said percompound, and (b) from 0.01 to 5 percent by weight of at least one optical brightener selected from the group consisting of 4,4'-bis-(azolyl)-stilbene-2,2'-disulfonic acids, stilbyl-naphthotriazoles, bis-(benzoxazolyl)-derivatives, 2-benzoxazolyl-4,5-naphthothiophene compounds, diphenyl-distyryl compounds and water-soluble acid addition salts thereof, and (2) from 0 to 97 percent of other customary ingredients of bleaching agents or washing agents having a bleaching effect.

3,779,932

SOLID WASHING COMPOSITIONS

Brian George Jaggers, 33 Park Dr., Romford; Keith Frederick Ufton, 261 Henley Rd., Ilford, and Horst Richard Wagner, 14 Kettleway Way, Ongar, all of England

Filed June 29, 1971, Ser. No. 158,048

Claims priority, application Great Britain, July 1, 1970, 31,862/70

Int. Cl. C11d *9/00*

U.S. Cl. 252—108 **26 Claims**

Solid washing compositions such as detergent, soap, bath salt or water softening compositions are perfumed by incorporation thereinto of a monomeric titanate or zirconate ester of a perfumery alcohol or phenol of formula MA_4, where M is titanium or zirconium and the groups A are the same or different organic groups at least one of which is a group of formula [— O — R] where R is the residue of a perfumery alcohol or phenol. Said esters provide slow release of aroma by hydrolysis under the conditions of use of said compositions.

3,779,933

ALKALINE OVEN CLEANING COMPOSITION

Howard L. Eisen, Fair Lawn, N.J., assignor to Glamorene Products Corporation, Clifton, N.J.

Continuation of Ser. No. 776,261, Nov. 15, 1968, abandoned, which is a continuation-in-part of Ser. No. 517,114, Dec. 28, 1965, abandoned. This application July 29, 1971, Ser. No. 167,450

Int. Cl. A21b *3/16*; **C11d** *1/32, 7/06*

U.S. Cl. 252—118 **1 Claim**

An alkali metal hydroxide and water solution having incorporated therein nitrogen-containing anionic surfactants combined with a polyhydric alcohol to form the active concentrate of a composition for cleansing food residue and soil from preheated surfaces of cooking ovens, grilles and the like. The particular anionic surfactants present in the concentrate have the important function of inhibiting the corrosive action of the concentrate on the human skin and mucuous tissues and consist specifically of the sodium salts of the condensation product of coconut fatty acids with a complex of polypeptides and amino acids derived from proteins (Maypon SK), of a complex of polypeptides and amino acids derived as a hydrolysate from proteins (Polypeptide No. 37) and of an amido methylated lauric acid (Sodium N-Lauroyl Sarcosinate Sarkosyl NL–97). The concentrate may include a thickening agent to render it surface adhering and additionally may be packaged in an aerosol container for expulsion therefrom by a propellant with or without a foam-forming and foam-stabilizing agent.

3,779,934

PROCESS AND AGENTS FOR THE CLEAR RINSE IN MECHANICAL DISHWASHING

Theodor Altenschopfer, Dusseldorf-Holthausen; Heimold Batka, Dusseldorf-Reisholz; Gunter Jakobi, Hilden; Peter Krings, Krefeld, and Hans-Jurgen Lehmann, Mettmann, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Dec. 7, 1971, Ser. No. 205,723

Claims priority, application Germany, Dec. 18, 1970, 2062464

Int. Cl. C11d *7/08*; **C23g** *1/02*; **B01f** *17/00*

U.S. Cl. 252—142 **10 Claims**

Process for rinsing of dishes in dishwashing machines having one or several clear-rinsing cycles using an aqueous solution of an adduct of from 3 to 30 mols of ethylene oxide to alkanediols with a linear alkane chain of from 10 to 20 carbon atoms and having vicinal, non-terminal hydroxyls, as well as clear-rinsing agents for use in the process.

3,779,935

INHIBITION OF CORROSION

Lee A. McDougall; Thomas E. Richards, and James R. Looney, all of Houston, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed July 12, 1971, Ser. No. 161,994

Int. Cl. C11d *7/48*; **C23f** *11/16*

U.S. Cl. 252—149 **15 Claims**

Corrosion of ferrous metals by corrosive acids at elevated temperatures is inhibited by adding to the corrosive acid a composition comprising effective amounts of at least one acetylenic alcohol, a quaternary ammonium compound and/or an amine, a surfactant, an organic solvent, and a formic acid compound selected from the group consisting of formate esters of the structure:

HCOOR

where R is a mono-aryl group, an alkyl group having 1 to 6 carbon atoms, cyclo-alkyl residues having 5 to 6 carbon atoms, alkenyl and alkynyl groups having 2 to 6 carbon atoms which may contain functional groupings selected from —C—OH, —OH, =C=O, —COOH, —SH, and NH_2 and formamides of the structure:

Where R_2 is hydrogen, mono-aryl groups, an alkyl group having 1 to 6 carbon atoms, cyclo-alkyl residues having 5 to 6 carbon atoms, alkenyl and alkynyl groups having 2 to 6 carbon atoms which may contain functional groupings selected from —C—OH, —OH, =C=O, —COOH, —SH, and NH_2.

The composition suitably contains a surfactant and an organic solvent.

3,779,936

CALCIUM CHLORIDE AND POLYETHYLENE GLYCOL DESICCANT BRIQUETTE

Roscoe L. Pearce, Midland; Gerald C. Stalker, Bay City, and John L. Arnold, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 142,994, May 13, 1971, abandoned. This application Feb. 4, 1972, Ser. No. 223,519

Int. Cl. B01d *53/26*

U.S. Cl. 252—194 **5 Claims**

Disclosed is an improved method for the briquetting of calcium chloride. The method involves intermixing polyethylene

glycol with the calcium chloride fines to be briquetted. The use of polyethylene glycol, which ranges in molecular weight from 1000 to 200,000 and is employed in an amount of from 0.1 to 10 weight percent of the calcium chloride, provides briquettes having distinct advantages over calcium chloride briquettes prepared without such an additive.

3,779,937
OPTICAL FILTER LAYER

Rainer Kitzing, Villars-sur-Glane; Max Marthaler, Marly-le-Petit, and Alfred Oetiker, Fribourg, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

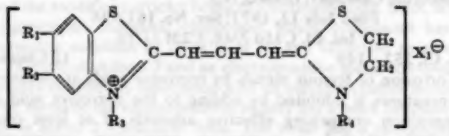
Filed Dec. 27, 1972, Ser. No. 318,814

Claims priority, application Switzerland, Dec. 31, 1971, 19241/71

Int. Cl. F21v *9/02*; G02b *5/20*

U.S. Cl. 252—300 **7 Claims**

Optical filter layer containing in polyvinyl alcohol a filter dyestuff of the formula



wherein R_1 and R_2 denote hydrogen atoms, halogen atoms or lower alkyl groups, R_3 and R_4 denote hydrocarbon radicals which may carry further substituents and X_1 denotes an anion. The filter layers possess a very good fastness to light.

3,779,938
METHOD FOR PROCESSING SCRAP FISSILE MATERIAL INTO A FORM SUITABLE FOR SHIPPING

Everett A. Weakley, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 18, 1972, Ser. No. 281,662

Int. Cl. C09k *3/00*

U.S. Cl. 252—301.1 R **3 Claims**

Scrap fissile materials and pyrophoric solids are added to a slurry of water and a nonburnable cementing material, masonry cement being preferred, and the resulting agglomeration is poured into a metal can. After the cementing material has been allowed to set to form a solid block within the can, the metal can is sealed with a metal lid. The scraps are thereby encapsulated in the solid cement block preventing exposure to the atmosphere and are held in a fixed lattice in the solid block thereby eliminating any fire hazard and eliminating any potential criticality. The scrap material, held in the billet so produced, is in a form suitable for safely shipping to a fuel scrap recovery plant which is located at a substantial distance from the place at which the scrap is produced. Upon arrival at the scrap recovery plant, the metal can is peeled from the solid block. The solid block is inserted whole or broken into smaller chunks and the chunks inserted into a high temperature oven and roasted to decompose the cementing material and convert the fissile material to the oxides. The fissile material is then leached from the oxides in the roasted product with acid which also decomposes any remaining cementing material. The fissile material is subsequently purified by extraction.

3,779,939
LIQUID LASER SOLUTION FORMED WITH A NEODYMIUM SALT IN PHOSPHORUS OXYCHLORIDE

Erhard J. Schmitschek, Munich, Germany, and John A. Trias, La Mesa, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1971, Ser. No. 111,128

Int. Cl. C09k *1/36, 1/62*

U.S. Cl. 252—301.4 P **3 Claims**

An improved liquid lasing solution is prepared by introducing neodymium trifluoroacetate into phosphorus oxychloride. Some Lewis acid is also desirably included in the solution in an amount to increase solubility of the neodymium III phosphorus dichloridate formed, optimize the intensity of fluorescense of the liquid lasing solution and enhance its operative efficiency. Preferably, Lewis acid of the form zirconium tetrachloride is employed and the neodymium (III) phosphorus dichloridate formed as a result of the dissolution of the neodymium trifluoroacetate in the phosphorus oxychloride is in a mole proportionality relative to the zirconium tetrachloride of not less than 1. The new liquid laser solution is highly stable over relatively long periods of time, does not degrade under flash excitation, and obviates certain undesirable absorption characteristics of comparable prior art liquid lasing compositions.

3,779,940
POLYISOCYANURIC ACID EMULSIFYING AGENTS AND DERIVATIVES

Perry A. Argabright, Larkspur, and C. Travis Presley, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Feb. 9, 1972, Ser. No. 224,904

Int. Cl. C08g *22/00*

U.S. Cl. 252—312 **7 Claims**

A mixture of molecules containing all of the following groups exhibit surface activity: isocyanurate, hydrogen-substituted isocyanurate, metal substituted isocyanurate, and at least one group selected from the class consisting of a monovalent organic radical selected from the following: isocyanate urethane (-$NHCO_2R'$), urea (-NHCONHR'), amino (-NH_2, -NHR', or -NR_2').

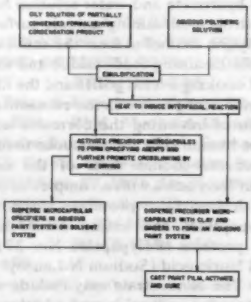
3,779,941
WATER-RESISTANT MICROCAPSULAR OPACIFIER SYSTEM AND PRODUCTS

Mabrin P. Powell, Chicago, Ill., assignor to Champion International Corporation, New York, N.Y.

Filed July 17, 1970, Ser. No. 55,925

Int. Cl. B01j *13/02*; B44d *1/02*; C09d *5/00*

U.S. Cl. 252—316 **23 Claims**



Microcapsules having controlled structural integrity are produced by a process which involves admixing oil-soluble,

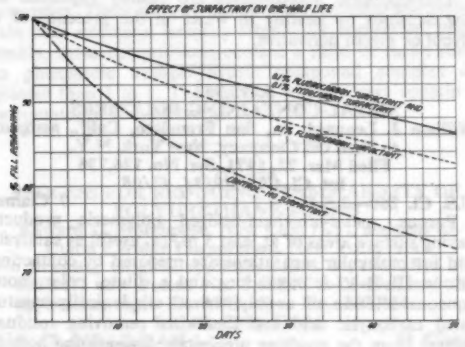
partially-condensed thermosetting condensation polymer-containing oily solution and a water-soluble polymer-containing aqueous solution and causing a chemical reaction between the polymers at the resulting oil/water interface. The microcapsules are activated by expelling the oily core material and replacing it with air and cured to provide opacifiers having excellent water resistance and may be employed as opacifying agents in coatings and particularly in paint films.

3,779,942

CAPSULES AND PROCESS FOR FORMING CAPSULES

Theodore F. Bolles, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 4, 1970, Ser. No. 95,036
Int. Cl. B01j *13/02*; B29c *13/00*; B44d *1/02*
U.S. Cl. 252—316 8 Claims



Capsules having an improved vapor barrier together with improved shell thickness, uniformity and strength comprise a central core of liquid fill material surrounded and enclosed by an outer shell, said shell containing at least one soluble surfactant in particular, sodium dioctylsulfosuccinate, sodium carboxymethyl cellulose, sorbitan sesquioleate, silicones, interpolymer of methyl vinyl ether and maleic anhydride, mixtures thereof, or fluorocarbon compounds.

3,779,943

PROCESS FOR REACTIVATING AN ALUMINIUM TRICHLORIDE CATALYST

Benedetto Calcagno; Marcello Ghirga, and Lucio Di Fiore, all of Milan, Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Continuation of Ser. No. 841,844, July 15, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 182,256
Claims priority, application Italy, July 22, 1968, 19272 A/68
Int. Cl. B01j *11/80*; C07c *0/356*
U.S. Cl. 252—411 R 2 Claims

The liquid aluminium trichloride-hydrocarbon complex formed from a catalytic process is reactivated by instantaneously vaporizing it under conditions such as to form no more than 25 wt. percent of normally gaseous products, e.g., at atmospheric pressure and 300° to 500° C, and the vaporized products are condensed and the normally liquid catalytic products are recovered. The complex can be used for catalysing the alkylation of benzene with propylene tetramer.

3,779,944

BUTADIENE POLYMERIZATION CATALYST

Charles Cozewith, Westfield, and Erik G. M. Tornqvist, Roselle, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 788,908, Jan. 3, 1969, Pat. No. 3,642,758. This application Aug. 27, 1971, Ser. No. 175,758. The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.
Int. Cl. C08d *1/14*
U.S. Cl. 252—429 B 6 Claims

Process utilizing Ziegler-type catalyst system for polymerizing butadiene to high molecular weight polybutadienes possessing varying proportions of trans-1,4 units, in the range of 50–90 percent comprising: an organoaluminum compound, a Lewis base, and a $Ti(halogen)_3nAlI_3$ composition. The polymers thus obtained exhibit outstanding properties as elastomers when cross-linked and as thermo-elastic polymers in the uncured state.

3,779,945

MIXTURES OF 3-(3,5-DIALKYL-4-HYDROXYPHENYL)-PROPIONIC ACID ESTERS OF ALKANEDIOLS

Martin Dexter, Briarcliff Manor; John D. Spivack, Spring Valley, and David H. Steinberg, Bronx, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 861,475, Sept. 26, 1969, Pat. No. 3,644,482, which is a continuation-in-part of Ser. No. 359,460, April 13, 1964, abandoned, which is a continuation-in-part of Ser. No. 276,192, April 29, 1963, abandoned, which is a continuation-in-part of Ser. No. 164,618, Jan. 5, 1962, abandoned, which is a continuation-in-part of Ser. No. 148,738, Oct. 30, 1961, abandoned. This application Oct. 9, 1970, Ser. No. 79,621. The portion of the term of this patent subsequent to Feb. 22, 1989, has been disclaimed.
Int. Cl. B01j *11/16*
U.S. Cl. 252—404 6 Claims

Mixtures of 3-(3,5-dialkyl-4-hydroxyphenyl)-propionic acid esters are stabilizers of organic material against thermo-oxidative ageing. They are prepared by conventional esterification techniques. A typical embodiment is a mixture of 2,2,4-trimethyl-1,6-hexanediol bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate] and 2,4,4-trimethyl-1,6-hexanediol bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate].

3,779,946

PRODUCTION OF TRANSITION METAL-CONTAINING SUPPORTED CATALYSTS

Ludwig Dorn; Manfred Mengel, both of Cologne, and Gerhard Heinze, Schildgen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 30, 1971, Ser. No. 167,792
Claims priority, application Germany, Aug. 5, 1970, P 20 38 884.5
Int. Cl. B01j *11/44*
U.S. Cl. 252—448 9 Claims

The process for the production of bead-form silica-containing supported catalysts containing transition metals in ionic or elemental form which comprises mixing a filler comprising an alkaline earth metal silicate with an aqueous dispersion of an inorganic oxide hydrate, converting this mixture into a solid bead-form granulate, calcining the granulate, at a temperature of about 500° to 750° C., and then treating the product with a solution of a transition metal salt, whereby the alkaline earth metal ions present in the granulate are replaced at least in part by transition metal ions. The aqueous dispersion is preferably silica sol and the filler calcium silicate, possibly admixed with kaolin, montmorillonite or attapulgite. After ion exchange, the granulate may be treated with hydrogen to reduce the transition metal ion.

3,779,947

METHOD OF CATALYST MANUFACTURE

Roy T. Mitsche, Island Lake, and John C. Hayes, Palatine, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 30, 1971, Ser. No. 214,398
Int. Cl. B01j *11/08, 11/22, 11/06*
U.S. Cl. 252—466 PT 6 Claims

An acid salt of tin is admixed with an acid salt of aluminum in aqueous solution. The pH is adjusted to form a coprecipitate which is washed substantially free of acid anions. The washed precipitate is formed into shaped particles, dried and calcined, and impregnated with a platinum group metal.

3,779,948

VITREOUS COMPOUNDS WITH BISTABLE ELECTRICAL CHARACTERISTICS

Jean Loriers, Meudon, and Rudolf Heindl, Fontenay Aux Roses, both of France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche Anvar, Paris, France

Filed July 28, 1971, Ser. No. 166,777
Claims priority, application France, July 31, 1970, 70.28387
Int. Cl. H01c *7/10*
U.S. Cl. 252—521 10 Claims

A new class of vitreous compounds having bistable electrical characteristics, that is to say, two different states of electric resistance is described.

The new class of vitreous compounds can be represented by the general formula (I):

$$Ca_{3-x-2z}Ln_xNa_{2+x+z}Al_{1-y}Fe_yV_3O_{12-x}F_x \quad (I)$$

wherein the letters have the usual meaning of the elements in the Periodic Table with the exception of Ln which designates as a whole a rare earth belonging to the group of lanthanides, such as lanthanum La, or yttrium Y, whereas x, y and z each represent numbers between 0 and 1, which can separately and simultaneously be zero, which are connected by relations of ionic equilibrium, and preferably respond to the inequalities

$x < 0.15$

$y < 0.5$

and

$z < 0.3$

An example of compound having the formula (I) is $Ca_3Na_2Al V_3O_{12}$ (II)

3,779,949

NEW ADDUCTS, CONTAINING EPOXIDE GROUPS, FROM POLYEPOXIDE COMPOUNDS AND BINUCLEAR N-HETEROCYCLIC COMPOUNDS

Daniel Porret, Binningen; Juergen Habermeier, Allschwil, and Hans Batzer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG

Filed Nov. 1, 1971, Ser. No. 194,569
Int. Cl. C08g *30/14*
U.S. Cl. 260—2 N 5 Claims

New "advanced" adducts, containing epoxide groups, from (1) polyepoxide compounds which on an average contain more than one epoxide group in the molecule, and (2) less than one equivalent of NH groups for every epoxide equivalent of the polyepoxide compound (1) of a binuclear, five or six-membered, unsubstituted or substituted N-heterocyclic compound with an endocyclic NH group in each nucleus, the heterocyclic rings being linked by a divalent aliphatic, cycloaliphatic or araliphatic radical, preferably an alkylene radical, which may be interrupted by oxygen atoms, e.g. the reaction product of 2 mols of diomethane-diglycidyl ether and 1 mol of 1,1'-methylene-bis-(5,5-dimethyl-hydantoin). The epoxide resins "advanced" by means of such nitrogen compounds have a good storage stability and excellent electrical properties.

3,779,950

EPOXY RESIN COMPOSITIONS

Leo S. Kohn, Schenectady, and Robert W. Smearing, Ballston Lake, N.Y., assignors to General Electric Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,107
Int. Cl. C08g *30/10, 30/14*
U.S. Cl. 260—2 EC 9 Claims

The shelf life of epoxy resin compositions useful for adhesives, varnishes, injection molding and the like and containing phenolic cure accelerator is increased by blocking all or part of the hydroxyl groups of the cure accelerator with aromatic monoisocyanate.

3,779,951

METHOD FOR EXPANDING MICROSPHERES AND EXPANDABLE COMPOSITION

Robert J. Streu, Essexville, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 82,102, Oct. 19, 1970. This application Nov. 21, 1972, Ser. No. 308,500
Int. Cl. B01j *13/02*; C08j *1/14, 1/26*
U.S. Cl. 260—2.5 B 11 Claims

Thermoplastic microspheres are readily expanded to low densities by heating in water in the presence of a glycol or glycol derivative.

3,779,952

METAL-CONTAINING POLYMERS

William J. Leonard, Jr., San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,736
Int. Cl. C08f *29/34, 47/08*
U.S. Cl. 260—2.5 R 7 Claims

Porous, metal-ion-chain-bridged polymeric products having surface areas of at least 5 $m.^2/g.$ useful as catalysts and for molecular separations are prepared by contacting Group III–B–V–A metal ions and a dilute, polar, nonaqueous solution of a polymerized ethylenically-unsaturated carboxylic acid and thereafter removing residual solvent from the resulting precipitate forming the porous metal/polymeric product.

3,779,953

FLAME-RETARDANT POLYURETHANES CONTAINING 1,2,5,6 - TETRABROMO-3,4-DIHYDROXYHEXANE

Anthony Joseph Papa, Saint Albans, W. Va., and William Robert Proops, Claymont, Del., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,295
Int. Cl. C08g *22/08, 51/58*
U.S. Cl. 260—2.5 AJ 10 Claims

Polymer compositions normally susceptible to burning are rendered flame-retardant by the incorporation therein of 1,2,5,6 - tetrabromo - 3,4 - dihydroxyhexane. In particular, a higher melting stereoisomeric form of the latter compound provides essentially scorch-free, self-extinguishing polyurethane foams which exhibit a good overall combination of physical and mechanical properties.

3,779,954

BENZAZIMIDE COMPOUNDS AS BLOWING AGENTS

Wolf-Dieter Wirth, Odenthal-Hahnenberg, and Erwin Müller and Harry Röhr, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,169
Claims priority, application Germany, Jan. 23, 1971, P 21 03 198.1
Int. Cl. C08j *1/20*
U.S. Cl. 260—2.5 R 12 Claims

The invention relates to the use of compounds of benzazimide or a substituted benzazimide as blowing

agents to produce cellular and porous articles based on synthetic resins, particularly on thermoplastic resins.

3,779,955

NON-BURNING RESINOUS COMPOUNDS AND STRUCTURES PREPARED FROM FURAN RESINS

Robert C. Wade, Ipswich, Mass., assignor to Resitron Corporation, Beverly, Mass.

No Drawing. Continuation of abandoned application Ser. No. 174,999, Aug. 25, 1971. This application Jan. 31, 1972, Ser. No. 222,332

Int. Cl. C08g *11/00, 41/04*

U.S. Cl. 260—2.5 F 4 Claims

Non-burning resinous compositions which are useful in bulk, as foams, as coatings, or as adhesives are provided by reacting aqueous phosphoric acid with non-reducing polyhydric compounds, such as ethylene glycol, propylene glycol, glycerine, and polyvinyl alcohol, and then reacting the complex thus formed with a furfuryl alcohol-containing compound, such as furfuryl alcohol or furfuryl alcohol-urea-formaldehyde condensates. Not less than about 3 percent of phosphorus is required in the final composition to give the desired non-burning characteristics. These compositions are hydrophobic and maintain their structural integrity after water immersion. Preferably, these compositions contain a ratio of furan resin to phosphoric acid-polyhydric compound complex of greater than 1 to 1. The reaction mixture may contain a pneumatogen and surfactant.

3,779,956

PROCESS FOR REDUCING FLAMMABILITY OF POLYURETHANE FOAMS

Edward L. Morehouse, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Dec. 24, 1969, Ser. No. 888,067, now Patent No. 3,686,254. Divided and this application Apr. 12, 1972, Ser. No. 243,454

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AH 11 Claims

This invention relates to the use of modified siloxane-polyoxyalkylene block copolymer foam stabilizers in the production of open-cell flexible polyether polyurethane foam having reduced flammability. The block copolymers are modified with certain silicon-bonded organic groups (e.g., $C_6H_5CH_2CH_2$— or bicycloheptyl groups) which increase the bulk surface tension of the block copolymers.

Open-cell flexible polyether polyurethane foams are produced commercially from reaction mixtures containing polyurethane-forming reactants, a catalyst for the reaction of the polyurethane-forming reactants to produce the polyurethane, a blowing agent and a siloxane-polyoxyalkylene block copolymer foam stabilizer. Such foams are, to some extent, flammable and are used in applications (e.g., automobile seat cushions and household furniture cushions) where fire creates a hazard. Accordingly, it is desirable to reduce the flammability of such foams.

3,779,957

MICROCAPSULAR OPACIFIER SYSTEM

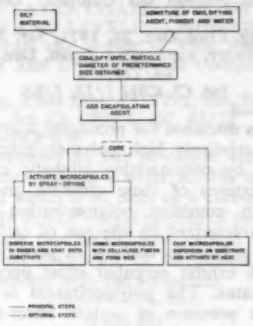
Anthony E. Vassiliades, Deerfield, Edward F. Nauman, Lake Forest, and Shrenik Shroff, Chicago, Ill., assignors to Champion International Corporation, New York, N.Y.

Application Apr. 29, 1969, Ser. No. 820,267, now Patent No. 3,669,899, which is a continuation-in-part of application Ser. No. 786,337, Dec. 23, 1968, now Patent No. 3,585,149. Divided and this application Apr. 20, 1972, Ser. No. 246,083

Int. Cl. B44d *1/02*; B01j *13/02*; C09d *5/00*

U.S. Cl. 260—2.5 B 32 Claims

Opacifiers comprising air-containing microcapsules having an average particle diameter of predetermined size with pigment particles incorporated in the microcapsular structure provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules, which contain the pigment particles in their structure, at temperatures sufficient to expel the liquid and provide air in the microcapsules.



3,779,958

METHOD OF PREPARING A PHENOL FORMALDEHYDE AMINE MICROPOROUS SHEET

Katsumi Ohba, Kanagawa, Japan, assignor to W. R. Grace & Co., Cambridge, Mass.

No Drawing. Filed July 15, 1971, Ser. No. 163,095

Int. Cl. C08g *9/00, 22/48*; H01m *3/00*

U.S. Cl. 260—2.5 F 10 Claims

Microporous resinous sheets particularly useful as battery separators are prepared from phenol/formaldehyde/amine resinous pre-products.

3,779,959

METHOD OF MAKING PHENOLIC RESIN FOAMS

Peter Pinten, Totilastr. 2, Cologne-Deutz, Germany; and Franz Weissenfels, Am Grafenkreuz 17; and Hans Jünger, Ziethstr. 190, both of Siegburg, Germany

No Drawing. Filed Nov. 26, 1965, Ser. No. 510,088

Claims priority, application Germany, Dec. 17, 1964, D 46,078

Int. Cl. C08g *53/08*

U.S. Cl. 260—2.5 F 3 Claims

1. A method of controlling the volume of the individual pores of a foam plastic prepared from an aqueous mass containing at least 70% by weight of a phenol aldehyde resin containing a liquid organic low-boiling blowing agent for producing the foam, a surface-active agent and an acid-hardening agent which comprises (a) preparing a plurality of samples of said foam plastic, the samples having a differing relationship in their respective pore volumes, said plurality being prepared by varying the relative proportion of castor oil rendered water-soluble by ethoxylation to ethoxylated nonyl phenol in said aqueous mass, (b) selecting a sample relative to such other samples which corresponds to the pore volume desired in the final foam plastic, and (c) preparing said final foam plastic from said aqueous mass containing the relative proportion of the selected sample, the combined amount of said castor oil and said ethoxylated nonyl phenol being between 0.5 and 5% referred to the phenol-aldehyde resin.

3,779,960

PROCESS FOR PRODUCING SYNTHETIC RUBBER LATEX HAVING HIGH POLYMER CONCENTRATION AND LOW VISCOSITY

Yoshihiko Araki and Hideo Hayashi, Yokohama, Japan, assignors to Nippon Oil Company Limited, Tokyo, Japan

No Drawing. Filed Dec. 28, 1971, Ser. No. 213,168
Claims priority, application Japan, Dec. 29, 1970, 46/121,056
Int. Cl. C08f *1/13, 1/84*
U.S. Cl. 260—8 8 Claims

A process is disclosed for producing a synthetic rubber latex having relatively high polymer concentration and low viscosity by polymerizing aliphatic conjugated diolefins or mixtures of these diolefins and vinyl compounds in an emulsion polymerization system. The process is characterized by the use of certain non-ionic water-soluble polymeric colloids in prescribed amounts, which colloids exhibit perculiar effect upon the quality of resulting latex. The polymerization is further conducted in the presence of certain water-soluble metal salts which contribute for limited amounts to the production of high quality latexes contemplated by this invention.

3,779,961

LACQUER BINDERS

Rolf Dhein, Krefeld-Bockum, and Hans-Jurgen Meissner and Rolf Kuchenmeister, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,486
Claims priority, application Germany, Aug. 4, 1970, P 20 38 768.2
Int. Cl. C08g *5/20*
U.S. Cl. 260—19 U 4 Claims

The invention of the present application are binders for aqueous lacquers, which can be applied in the customary manner, but especially according to the electrodeposition lacquering process. A further subject of the invention is a process for the manufacture of such binders.

3,779,962

STABILIZER-LUBRICANT COMBINATIONS FOR HALOGEN-CONTAINING POLYMERS

Gunter Koenen, Kirchfeld 15, Lendersdorf, near Duren, Germany, and Alfred Szczepanek, Gurzenicher Strasse 45, Duren-Rolsdorf, Germany

No Drawing. Continuation-in-part of application Ser. No. 865,213, Oct. 9, 1969, which is a continuation-in-part of application Ser. No. 619,150, Feb. 28, 1967, both now abandoned. This application Oct. 9, 1970, Ser. No. 79,660
Int. Cl. C08f *45/56, 45/62*
U.S. Cl. 260—23 XA 11 Claims

Dust-free, stabilizer-lubricant compositions for halogen-containing polymers, particularly polyvinyl chloride, contain a free-flowing homogeneous melt of a metal-free organic material compatible with the polymer, a basic lead salt of an inorganic or an organic acid, and optionally a calcium, barium or strontium soap of a C_{8-22} monocarboxylic acid.

3,779,963

PROCESS FOR INTRODUCING FUNCTIONAL SUBSTITUENTS ONTO A POLYMER BACKBONE USING MILD OXIDATIVE CONDITIONS

Fred H. Ancker, Warren, N.J., and Dale F. Pollart, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 66,630, Aug. 24, 1970, which is a continuation-in-part of application Ser. No. 610,461, Jan. 20, 1967, which in turn is a continuation-in-part of application Ser. No. 528,349, Feb. 18, 1966, all now abandoned. This application June 30, 1972, Ser. No. 267,996
Int. Cl. C08f *27/00, 27/22*
U.S. Cl. 260—23 H 1 Claim

Process for grafting low molecular weight functionally substituted organic compounds to polyolefins by free radical combination reactions under mild oxidative conditions.

3,779,964

ASPHALT RUBBERIZING COMPOSITIONS

Duane W. Gagle, Homer L. Draper, and Richard J. Bennett, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,869
Int. Cl. C08c *11/68*
U.S. Cl. 260—28.5 AS 6 Claims

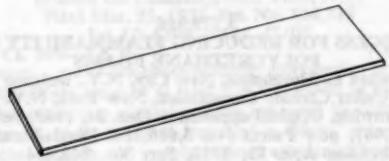
The low temperature ductility of asphalts is improved by incorporation of a small amount of a blend comprising rubber, a heavy residual petroleum oil high in aromatics, and carbon black. Asphalts containing a liquid oil-rubber-carbon black blend can be used in paving compositions and the like.

3,779,965

EXTRUDED DISC GASKET FOR ALCOHOLIC BEVERAGE BOTTLE CAPS

John William Lefforge, Lynnfield, Mass., and George Crawford Keller, Derry, N.H., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,168
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 B 19 Claims



A gasket excellently adapted for use in caps for bottles containing beverages of high alcoholic content can be prepared by admixing a molten thermoplastic polymer, a petroleum oil, a completely saturated paraffinic wax or polyethylene wax, a particulate titanium dioxide pigment, and an antioxidant, forming the resulting melt into a sheet having a thickness of about 3–7 mm., cooling said sheet to solidify the melt, chopping the cooled solid sheet into small particles, charging the particles into an extruder, extruding to form a sheet about 0.01–0.03 inch (i.e., ca. 10–30 mils), cutting the sheet into discs, and inserting and seating the discs into caps which have been preheated to about 250° F. Block copolymers having end segments of polystyrene and center segments of polybutadiene or polyisoprene can be used as the thermoplastic polymer for making the gaskets.

3,779,966

POLYMERIZABLE WATER-IN-OIL EMULSIONS

Charles Earl Weeks, St. Paul, and Golden Fred Watts, Rosemount, Minn., assignors to Ashland Oil, Inc., Houston, Tex.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,167
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 NR 16 Claims

Polymerizable water-in-oil emulsions of thermosettable polyester resins containing cyclic ortho-positioned dicarboxylic acid moieties which can be consistently cured to a water-extended polymer with a copolymerizable vinyl monomer solvent using low cobalt promoter levels in a cure system containing a peroxy-free radical generating catalyst, and an aromatic tertiary amine and a cobalt compound as a copromoters.

3,779,967

STORAGE STABLE CONCENTRATED AQUEOUS EMULSIONS PREPARED FROM A MIXTURE OF METHYLHYDROGEN SILOXANE AND METHYL POLYSILOXANE, AN AMINATED POLYMER AND AN EPOXY COMPOUND

Michel Camp, Lyons, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,325
Claims priority, application France, Sept. 29, 1969, 6933126
Int. Cl. C08g *47/10;* C08j *1/46*
U.S. Cl. 260—29.2 M 10 Claims

Storage-stable aqueous emulsions containing less than 80% water contain a methylhydrogenopolysiloxane/methylpolysiloxane mixture, an emulsifier and 1.5 to 30%, based on the weight of polysiloxane, of a curable reaction product of (a) an aminated polymer having repeat units

$$—NR—(C_nH_{2n}NR)_x—A—$$

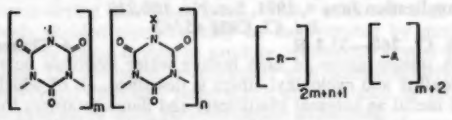
where R is H or C_1–C_4 alkyl, $n > 2$, x=1–7 and A=—CO—, —CS—, —CO—Q— or —CO—Q′—CO— where Q=C_2–C_8 alkylene and Q′=a divalent radical; and (b) a compound having at least one halohydrin or epihalohydrin group or at least two ethylene oxide groups. Dilution of the emulsion and addition of convention catalysts gives a bath suitable for waterproofing textiles in a manner resistant to repeated rubbing and washing.

3,779,968

GEL COMPOSITION

Perry A. Argabright, Larkspur, and C. Travis Presley, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Aug. 23, 1971, Ser. No. 173,892
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 BM 8 Claims



A gel composition sufficiently stable to support its own weight having elasticity and cohesive character produced by contacting, at a pH above 7, polyvinyl alcohol with a compound which contains more than one isocyanurate salt group.

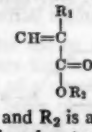
3,779,969

FRICTION REDUCING IN FLOWING HYDROCARBON FLUIDS

Robert Clayton Slagel, Pittsburgh, and Arnold Eugene Bloomquist, Bethel Park, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Original application Aug. 6, 1970, Ser. No. 61,852, now Patent No. 3,654,994. Divided and this application Dec. 21, 1971, Ser. No. 210,626
Int. Cl. C08f *3/64, 3/66, 29/46*
U.S. Cl. 260—29.6 E 10 Claims

This disclosure is directed to a method and composition useful in reducing the friction loss in flowing hydrocarbon fluids. The composition is an emulsion consisting essentially of a homopolymer or copolymer of



where R_1 is H or CH_3 and R_2 is an alkyl group of 8 to 18 carbon atoms, a glycol and water. The method comprises mixing the emulsion with the hydrocarbon fluid and then adding a lower alkyl alcohol which causes the polymer to be transferred from the emulsion phase to a hydrocarbon solution.

3,779,970

THICKENED LATEX COATINGS WITH IMPROVED FLOW AND LEVELING PROPERTIES

Syamalarao Evani and Robert H. Lalk, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,393
Int. Cl. C08f *41/02, 41/12*
U.S. Cl. 260—29.6 RW 12 Claims

The improvements of this invention are obtained by adding to a latex coating a water soluble salt of a polymeric material which is an ester of a carboxylic polymer having about 28 to 62.5 weight percent of pendant carboxylic acid groups (—COOH) and certain nonionic surfactants wherein about 0.5 to 10 percent of the acid groups are esterified with the surfactant.

3,779,971

LATEX-MODIFIED MORTAR COMPOSITIONS

Jerry E. Isenburg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 120,325, Mar. 2, 1971, which is a division of application Ser. No. 868,596, Oct. 22, 1969, which in turn is a continuation-in-part of application Ser. No. 610,497, Jan. 20, 1967, all now abandoned. This application July 24, 1972, Ser. No. 274,584
Int. Cl. C04b *13/24;* C08f *45/24;* E04g *21/20*
U.S. Cl. 260—29.6 S 2 Claims

The invention is directed to high strength portland cement mortar compositions modified with certain vinylidene chloride polymer latexes and containing in addition, specified types of finely divided naturally occurring carbonate materials composed of a natural carbonate consisting of the minerals calcite, dolomite and magnesite which may comprise a continuous gradation from calcium carbonate through calcium magnesium carbonate to magnesium carbonate. It has unexpectedly been found that the addition of such carbonate materials greatly enhances the workability of the latex-modified portland cement mortar compositions without adversely affecting the strength characteristics of such compositions.

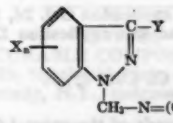
3,779,972

PRESERVATIVES FOR AQUEOUS COMPOSITIONS WHICH CONTAIN ADDITION POLYMERS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Nov. 22, 1971, Ser. No. 201,194, now abandoned. Divided and this application Mar. 15, 1973, Ser. No. 341,561
Int. Cl. C08d *11/00;* C08f *45/64;* C09d *5/14*
U.S. Cl. 260—29.6 MN 9 Claims

Aqueous compositions that are subject to decomposition and spoilage by the action of bacteria are preserved by incorporating in them a small amount of a compound having the structural formula



wherein X represents halogen, nitro, acoylamino, aroylamino, (halobenzylidene)amino, or methyleneimino; Y represents hydrogen, halogen, acoylamino, or methyleneimino; m is a number in the range of 4 to 8; and n is a number in the range of zero to 4. Illustrative of these compounds are N-(5,7-dichloroindazolyl - N^1 - methyl) piperidine and N-(3-chloro-5-nitroindazolyl-N^1-methyl) hexamethyleneimine.

3,779,973

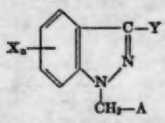
PRESERVATIVES FOR AQUEOUS COMPOSITIONS WHICH CONTAIN ADDITION POLYMERS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Nov. 22, 1971, Ser. No. 201,194, now abandoned. Divided and this application Mar. 15, 1973, Ser. No. 341,562

Int. Cl. C08d *11/00*; C08f *45/64*; C09d *5/14*
U.S. Cl. 260—29.6 MN 9 Claims

Aqueous compositions that are subject to decomposition and spoilage by the action of bacteria are preserved by incorporating in them a small amount of a compound having the structural formula



wherein X represents halogen, nitro, acoylamino, aroylamino, (halobenzylidene)amino, or methyleneimino; Y represents hydrogen, halogen, acoylamino, or methyleneimino. A represents halogen; and *n* represents a number in the range of zero to 4. Illustrative of these compounds is N¹-chloromethyl-5,7-dichloroindazole.

3,779,974

SULFONATED BUTYL RUBBER LATICES

Addison W. Hubbard, Scotch Plains, and Kenneth W. Powers, Berkeley Heights, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Sept. 26, 1972, Ser. No. 292,415

Int. Cl. C08d *5/00*
U.S. Cl. 260—29.7 B 10 Claims

A rubber latex of sulfonated butyl rubber containing >0.5 mole percent SO_3H is prepared by forming an emulsion of a solution of sulfonated butyl rubber in a suitable solvent using non-ionic emulsifiers and thereafter stripping off the solvent to leave a latex of sulfonated butyl rubber dispersed in water. Prior to stripping the solvent, the emulsifiers are removed from the system by centrifugation, the sulfonated butyl rubber being self-emulsifiable, once it has been dispersed. Plasticizers are added to the latex to prevent cracking of films prepared therefrom.

3,779,975

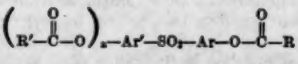
SULFONE-ESTER COMPOUNDS AS PLASTICIZERS FOR POLYVINYL CHLORIDE RESINS

John R. Clark, Nutley, and Claire Bluestein, Glen Rock, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Original application Oct. 24, 1969, Ser. No. 869,362. Divided and this application Dec. 13, 1971, Ser. No. 207,548

Int. Cl. C08f *45/46*
U.S. Cl. 260—30.8 R 3 Claims

Sulfone-ester compounds of the general formula



where *n* is 0 or 1, Ar and Ar' represent aryl radicals, and R and R' represent long chain aliphatic radicals. Compounds encompassed by the above formula are suitable as plasticizers for polyvinyl chloride resins.

3,779,976

ACRYLIC POLYMER MODIFIED POLYVINYL FLUORIDE COATING COMPOSITIONS

Henry J. De Maravic, Glassboro, N.J., Daniel Strugar, Brunswick, Ohio, and Dao-Tsing Wu, Villanova, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 47,558, June 18, 1970. This application Oct. 22, 1971, Ser. No. 191,905

Int. Cl. C08f *45/34*
U.S. Cl. 260—32.8 R 7 Claims

Coating compositions comprising particulate polyvinyl fluoride, acrylic polymer, and an organic solvent for the acrylic polymer which is a nonsolvent for the polyvinyl fluoride, having good rheology are provided.

3,779,977

THERMOSETTING NONAQUEOUS DISPERSION POLYMERS

Darrell D. Hicks, Jeffersontown, Ky., assignor to Celanese Coatings Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 751,026, Aug. 8, 1968. This application Aug. 4, 1971, Ser. No. 169,052

Int. Cl. C08c *11/22*; C08f *45/28*
U.S. Cl. 260—33.6 UA 8 Claims

Heat curable coating compositions useful in primers and can coatings are made from a dispersion of an acrylonitrile copolymer in a liquid butadiene homopolymer or copolymer and an inert, relatively non-polar organic hydrocarbon liquid.

3,779,978

POLYBROMO-CYCLOALIPHATIC ETHERS AS FLAME RETARDANT PLASTICIZERS

Paul M. Kerschner, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Original application Dec. 29, 1967, Ser. No. 694,423, now Patent No. 3,631,112. Divided and this application June 4, 1971, Ser. No. 150,212

Int. Cl. C08f *45/42*
U.S. Cl. 260—33.2 R 6 Claims

A unique group of high boiling water insoluble polyhaloalkyl and cycloalkyl ethers is described, all of which are useful as external plasticizers and flame retarders for thermoplastic organic polymers, such as polyethylene, polystyrene and polymethylmethacrylate.

These plasticizer/flame retarder compositions are advantageously produced by adding a solution of halogen, such as bromine, in a lower aliphatic alcohol to a multiunsaturated aliphatic or cycloaliphatic hydrocarbon and then adding sufficient water to the reaction mixture to separate the desired product as an insoluble lower liquid phase.

3,779,979

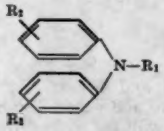
PROCESS FOR THE PREPARATION OF NOVEL HIGH CHLORINATED BUTYL RUBBER AND VULCANIZABLE COMPOSITIONS CONTAINING THE SAME

Shozo Tsuchiya, Kawasaki, Japan, assignor to Nippon Oil Company, Ltd., Tokyo, Japan

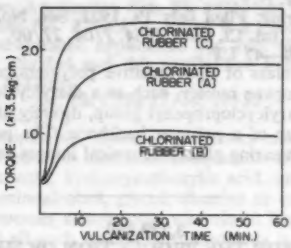
Filed Dec. 21, 1971, Ser. No. 210,335

Int. Cl. C08c *11/22*, *11/24*; C08d *5/04*
U.S. Cl. 260—33.6 A 7 Claims

A process for the preparation of chlorinated isobutylene-multiolefin copolymer in which more than one but not exceeding 2 chlorine atoms per one double bond in the copolymer are introduced by chlorinating the copolymer in the presence of a diarylamine derivative of the formula



wherein R_1 represents a hydrocarbon residue of 1–20 carbon atoms and R_2 and R_3 each represent hydrogen or a hydrocarbon residue of 1–20 carbon atoms.



The chlorinated copolymer exhibits particularly improved co-vulcanizability, heat stability and adherability.

3,779,980

POLY(VINYL CHLORIDE) HOMOPOLYMER COMPOSITES—FREEZE-DRY TECHNIQUE FOR PREPARATION

Harmon L. Liebman and Shirley A. Liebman, Lancaster, and Gary W. Paddison, York, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 8, 1971, Ser. No. 205,874
Int. Cl. C08f *47/00*
U.S. Cl. 260—34.2 **6 Claims**

Poly(vinyl chloride) homopolymer composites having improved rheological properties are readily prepared by adding plasticizers and stabilizers to aqueous dispersions of the poly(vinyl chloride) homopolymer particles and freeze-drying the dispersions. Other additives such as finely divided pigments may be incorporated by mixing prior to freeze-drying to produce preblended binder systems. The invention is concerned with homopolymers of poly(vinyl chloride) resin which are prepared by either suspension or bulk polymerization techniques.

3,779,981

SIZING COMPOSITION AND GLASS FIBERS TREATED THEREWITH

John E. Ward, Houghton, Mich., assignor to Owens-Corning Fiberglas Corporation

No Drawing. Original application Apr. 3, 1970, Ser. No. 25,584, now Patent No. 3,652,326. Divided and this application Nov. 15, 1971, Ser. No. 198,940
Int. Cl. C08g *51/10*
U.S. Cl. 260—40 R **10 Claims**

A sizing for glass fibers, comprising water soluble epoxy resins, an organosilane, polyvinyl acetate copolymer and a lubricant is provided, whereby the sized glass fibers in the form of strands, possess excellent integrity.

3,779,982

DIELECTRIC LAYER COMPOSITION

Carolyn J. Camp, Livermore, and Robert O. Lindblom, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,299
Int. Cl. C08f *45/04*; C08g *45/04*
U.S. Cl. 260—41 R **6 Claims**

A dielectric layer for use on electroconductive papers, particularly at relatively high humidities, consisting of 15 to 85 volume percent of a copolymer of vinylidene chloride and at least one other olefinically unsaturated monomer, 8 to 77 volume percent of an epoxy resin having an epoxy equivalent weight between 400 and 60,000, and, optionally, 0 to 42 volume percent of a pigment.

3,779,983

ACRYLIC FIBERS AND FILMS WHICH PARTICULARLY ARE SUITED FOR THERMAL STABILIZATION

Andrew Di Edwardo, Parsippany, Robert Dix, Wayne, and John Riggs, Berkeley Heights, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed June 1, 1972, Ser. No. 258,788
Int. Cl. C08f *27/06*
U.S. Cl. 260—45.7 S **12 Claims**

An improved process is provided for the production of stabilized acrylic fibers and films. A minor quantity of an alkali metal salt of an organic sulfonate is provided in intimate association with an acrylic fibrous material or film and is incorporated therein in a non-polymerized form. Upon heating (preferably while present in an oxygen-containing atmosphere) the thermal stabilization reaction is promoted by the presence of the alkali metal salt of an organic sulfonate. The resulting stabilized fibrous material or film is flexible and non-burning, and may be utilized as a fire resistant fiber, fabric or film, or optionally carbonized or carbonized and graphitized to form a carbonaceous fibrous material or film.

3,779,984

HALOGENATED CARBONATES AS FIRE RETARDANTS FOR POLYESTERS

Jurgen H. Exner, Eric R. Larsen, and Jeffrey A. Gunsher, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Aug. 3, 1970, Ser. No. 60,778, now Patent No. 3,688,001. Divided and this application July 14, 1972, Ser. No. 272,016
Int. Cl. C08g *51/54*
U.S. Cl. 260—45.7 R **10 Claims**

New halogenated carbonates containing halogenated neopentyl groups have been found which are extremely useful as fire retardant additives for polyesters.

3,779,985

STABILIZATION OF FLUORINE-CONTAINING VINYL POLYMERS

Gunther Heuser, Troisdorf-Oberlar, Gregor Weisgerber, Konigswinter, and Erich Behr, Troisdorf, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,864
Claims priority, application Germany, Nov. 30, 1970, P 20 58 823.2
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.95 R **5 Claims**

Improved heat stabilization and ultraviolet light stabilization for fluorine-containing vinyl polymers such as polyvinyl fluoride by the admixture with such polymers of a mixture of a polyol, a polynuclear phenol and an hydroxy benzophenone. It is preferred to establish the stabilizer mixture of 0.15 to 1.0 weight percent of the polyol, 0.05 to 0.5 weight percent of the polynuclear phenol, and 0.3 to 1.0 weight percent by weight of the hydroxy benzophenone, each related to the polymer being stabilized. The proportion of stabilizer as a whole is 0.1 to 5.0 percent by weight related to the polymer weight.

3,779,986

CURABLE COMPOSITIONS

Stanley D. Smith, Northfield, Ohio, and Stephen B. Hamilton, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 104,488, Jan. 6, 1971, now Patent No. 3,689,454. This application Aug. 21, 1972, Ser. No. 282,337
The portion of the term of the patent subsequent to Sept. 5, 1989, has been disclaimed and dedicated to the Public
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 G **20 Claims**

Fluid organopolysiloxanes which are vulcanizable at room temperature to silicone elastomers are prepared by

mixing a novel titanium catalyst such as the propanedioxy bis(ethylacetoacetonate) complex of titanium, a cross-linking agent such as methyltrimethoxysilane and a silanol chain-stopped polydiorganosiloxane fluid having a viscosity of 1,000 to about 10,000 centipoises at 25° C. in the absence of moisture. These compositions are stable, free-flowing fluids in the absence of moisture but cure to the rubbery solid elastic state upon exposure to moisture. The compositions are particularly useful as adhesives and sealants in the construction of electronic equipment in that they do not give off corrosive by-products when curing.

3,779,987

PROCESS FOR PRODUCING DIORGANOPOLYSILOXANE POLYMERS

John S. Razzano, Troy, N.Y., assignor to General Electric Company

No Drawing. Filed Oct. 12, 1972, Ser. No. 296,797

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R **14 Claims**

A process for producing diorganopolysiloxane polymers having a viscosity of 1000 to 200,000,000 centipoises at 25° C. and an aromatic content of 1 to 50 mole percent comprising mixing a first cyclic polysiloxane with a second cyclic polysiloxane in the presence of 1 to 90 parts based on 100 parts of said first cyclic polysiloxane of a linear diorganopolysiloxane additive having a viscosity of 10,000 to 200,000,000 centipoises at 25° C., where the organo groups in the linear diorganopolysiloxane are selected from the class consisting of alkyl, cycloalkyl, mononuclear aryl, mononuclear alaryl, mononuclear aralkyl, alkenyl, binuclear aryl and mixtures theerof wherein less than 50 mole percent of the organo radicals may be aromatic and no more than 50 mole percent of the organo radicals may be selected from alkenyl; heating the mixture to temperatures in the range of 110–175° C. to drive off moisture; adding up to 50 parts per million of an alkali metal hydroxide to the mixture; and equilibrating the resulting mixture at a temperature in the range of 140 to 200° C. until the desired reaction product is obtained.

3,779,988

POLYEPOXIDE-POLYSILOXANE COMPOUNDS, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE

Heinz Rembold, Arlesheim, Dieter Baumann, Birsfelden, and Jurgen Habermeier, Pfeffingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,376

Claims priority, application Switzerland, Sept. 16, 1971, 13,603/71

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **4 Claims**

New polyepoxide-polysiloxanes are obtained if linear or branched polysiloxanes which contain not more than 4 reactive H atoms and/or alkoxy groups per molecule are esterified or trans-esterified, according to processes which are in themselves known, with cycloaliphatic epoxide-alcohols which contain at least one epoxide group located on a cycloaliphatic ring or ring system and at least one hydroxyl group in the molecule.

The new cycloaliphatic polyepoxide-polysiloxanes can be cured with conventional epoxide resin curing agents, especially cycloaliphatic polycarboxylic acid anhydrides, to give flexible to rubbery-elastic mouldings which show very low water absorption coupled with excellent dielectric properties and high tracking resistance and arcing resistance.

3,779,989

LIGHT-SENSITIVE POLYMERS CONTAINING A PHENYL-DIARYLCYCLOPROPENE MOIETY, THEIR PREPARATION AND USE

Donald H. Wadsworth and William C. Perkins, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 19, 1971, Ser. No. 164,044

Int. Cl. C08f *3/64, 7/04, 27/00*

U.S. Cl. 260—47 UP **19 Claims**

A novel class of light-sensitive polymers contain a diarylcyclopropene moiety, such as a diarylcyclopropenium ion or a diarylcyclopropenyl group, directly attached to a phenyl group of a polymer backbone. The polymers are useful in preparing photomechanical images and for other purposes.

3,779,990

PROCESS FOR THE PRODUCTION OF SHAPEABLE POLYMERS CONTAINING COO-SILYL GROUPS

Gerd Greber, Binningen, and Roland Darms, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,262

Claims priority, application Switzerland, Feb. 26, 1971, 2,902/71

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **6 Claims**

The invention relates to a process for the production of shapeable polymers containing COO-silyl groups, especially polyamide-imides and polyimides containing COO-silyl groups, said process comprising treating polyamide acids with suitable silylating agents, as well as the novel polymers obtained by said process and their use for the production of shaped structures such as films, fibres, coatings, adhesives and the like. The polymers prepared according to the invention are distinguished by an inherent viscosity of from 0.1 to 4.0 and their improved solubility in organic solvents which facilitates the processing of said polymers.

3,779,991

SILICON-HYDANTOIN-ESTER RESINS

Jerome A. Preston, Angola, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.

No Drawing. Continuation-in-part of application Ser. No. 58,173, July 24, 1970, now Patent No. 3,681,282. This application July 28, 1972, Ser. No. 275,922

The portion of the term of the patent subsequent to Aug. 1, 1989, has been disclaimed

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 E **13 Claims**

Resin composition comprising the reaction product of a reactive hydantoin based compound, a polycarboxylic acid, and tris (2-hydroxyethyl) isocyanurate. The resin provides a low cost, cured enamel for electrical conductors characterized by high thermal stability and a low coefficient of friction when it contains linear, reactive organo silicon material.

3,779,992

INTERPOLYMERIZATION OF ETHYLENE WITH OTHER VINYL MONOMERS IN AQUEOUS EMULSION

Joseph K. Liu, Pierrefonds, Quebec, Canada, and Maurice Douek, Los Angeles, Calif., assignors to Gulf Oil Canada Limited, Toronto, Ontario, Canada

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,076

Int. Cl. C08f *1/13*

U.S. Cl. 260—63 UY **19 Claims**

An improvement in low pressure aqueous emulsion interpolymerization of ethylene with other vinyl monomers is disclosed wherein Mn^{+3} bisulfite redox initiator is used under specific conditions.

3,779,993

POLYESTERS AND POLYESTERAMIDES CONTAINING ETHER GROUPS AND SULFONATE GROUPS IN THE FORM OF A METALLIC SALT

Charles J. Kibler and Gerald R. Lappin, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Application Feb. 27, 1970, Ser. No. 15,193, now Patent No. 3,734,874, which is a continuation-in-part of abandoned application Ser. No. 695,339, Jan. 3, 1968. Divided and this application Feb. 15, 1973, Ser. No. 332,859

Int. Cl. C08g *17/06, 20/30*

U.S. Cl. 260—75 S 34 Claims

Water-dissipatable, meltable polyesters and polyesteramides derived from monomer components which include dicarboxylic acid, hydroxycarboxylic acid, aminocarboxylic acid, aminoalcohol, glycol, diamine or combinations of such monomer components wherein at least a part of the total of all such monomer components is a poly(ethylene glycol), and at least a part of said total is one or more of said monomer components substituted with one or more sulfonate metal salt groups. A typical polyester is composed of 80 mole parts of isophthalic acid, 10 mole parts of adipic acid, 10 mole parts of 5-sodiosulfoisophthalate, 20 mole parts of ethylene glycol and 80 mole parts diethylene glycol. Such polymers are useful as adhesives, coating materials, films, packaging materials and other products which can be dissolved, dispersed or otherwise dissipated in cold water, hot water or aqueous solutions.

3,779,994

METHOD FOR PREPARING POLYURETHANE FROM POLYISOCYANATE AND POLYALKANOLAMINE USING A BLOCKING ACID SALT

Louis L. Wood, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 26, 1972, Ser. No. 300,937

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AQ 4 Claims

The invention disclosed is a method for preparing new curable water soluble polymers. The product polymers upon being cured are characteristically water insoluble and when applied to fibers provide useful wet strength additives.

3,779,995

THERMOPLASTIC AN DTHERMOSETTING ALLYL CARBAMATE RESINS

Bobby F. Dannels and Alvin F. Shepard, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 42,883, June 2, 1970, which is a continuation-in-part of application Ser. No. 788,008, Dec. 30, 1968, now Patent No. 3,557,249. This application Dec. 6, 1971, Ser. No. 205,378

Int. Cl. C08g *22/16, 51/40*

U.S. Cl. 260—77.5 MA 33 Claims

Novel allyl resins are produced by reacting at an elevated temperature an addition product of an allylic alcohol and an organic diisocyanate. The products may be produced in one step by heating an allyl carbamate intermediate prepared from the components in a ratio sufficient to provide about 1.4 to about 2.2 isocyanato groups per hydroxyl group, or in two steps by reacting an intermediate prepared from a stiochiometric mixture of components with additional diisocyanate so that the total ratio of components in the product is sufficient to provide about 1.4 to about 2.2 isocyanato groups per hydroxyl group. When mixed with a free radical catalyst the products of the invention are useful for many purposes such as in the production of reinforced and laminated plastic articles, and in the preparation of molded articles.

3,779,996

POLYAMIDEIMIDES FROM UNSATURATED ANHYDRIDES

Denis R. Pauze, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 91,138, Nov. 19, 1970. This application Sept. 11, 1972, Ser. No. 288,223

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 AM 24 Claims

The properties of unsaturated anhydride chain-blocked polyamideimides containing free carboxyl and amine groups are improved by reacting with the uncured material polyisocyanate.

3,779,997

POLY(HEXASUBSTITUTED MELAMINES)

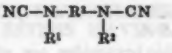
Bruce A. Langager, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed June 12, 1972, Ser. No. 261,924

Int. Cl. C08g *33/02*

U.S. Cl. 260—77.5 R 14 Claims

Poly(hexasubstituted melamines) prepared by the Lewis acid catalyzed polymerization of alkylene bis-(N-substituted cyanamides) of the formula



wherein R^1 and R^2 are broadly alkyl or aryl and R^3 is alkylene, such polymers being curable to a storable B-stage as well as fully cured condition, having excellent high temperature stability and being useful as structural adhesives or binders.

3,779,998

PROCESS FOR THE POLYMERIZATION OF LACTAMS

Karl-Heinz Hermann, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 2, 1971, Ser. No. 159,499

Claims priority, application Germany, July 4, 1970, P 20 33 265.4

Int. Cl. C08g *20/10*

U.S. Cl. 260—78 L 9 Claims

A process for the polymerization of a lactam having at least 7 ring members in the presence of a catalytic quantity of an inorganic or organic oxy acid of phosphorus wherein the catalyst is added to the monomeric lactam melt of at least 200° C. under rapid stirring and the catalyst-containing lactam melt is subsequently heated to a polymerization temperature of from 280 to 340° C.

3,779,999

PROCESS FOR THE PREPARATION OF BRANCHED CONJUGATED DIENE COPOLYMERS

John L. Snyder, Long Beach, Mary J. Papavasiliou, Gardena, and Roger H. Mann, Corona del Mar, Calif., assignors to Shell Oil Company, Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 102,194, Dec. 28, 1970, which is a continuation-in-part of application Ser. No. 759,518, Sept. 12, 1968, now Patent No. 3,551,392. This application Dec. 27, 1971, Ser. No. 211,941

Int. Cl. C08d *5/02, 5/04*

U.S. Cl. 260—78.4 D 3 Claims

Conjugated diene polymers having a branched molecular configuration are prepared by first polymerizing a conjugated diene with an alkyl lithium initiator and thereafter coupling the first polymer with a diester of dicarboxylic acids with monohydric alcohol to form a low molecular weight polymer having satisfactory coagulation characteristics, driability, and processability.

3,780,000

AROMATIC POLYMERS WITH THIOETHER GROUPS

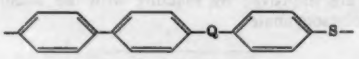
Ronald George Feasey, Knebworth, and John Brewster Rose, Letchworth, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 29, 1971, Ser. No. 193,982

Int. Cl. C08g *15/00, 23/00*

U.S. Cl. 260—79.3 M 2 Claims

An aromatic polymer comprising units having the formula



where Q is —CO— or —SO_2— and may vary from unit to unit in the polymer chain, either alone or copolymerised with other units.

3,780,001

(HYDROCARBONTHIO)OXAMIDE VULCANIZATION RETARDERS

Pyong-Nae Son, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,653

Int. Cl. C08c *9/00, 11/54;* C08d *9/00*

U.S. Cl. 260—79.5 A 11 Claims

(Hydrocarbonthio)oxamides are efficient, non-blooming vulcanization retarders. The compounds are prepared by the reaction of oxamide (or oxanilide) with a hydrocarbon sulfenyl chloride.

3,780,002

BROAD MOLECULAR WEIGHT BUTYL RUBBER PROCESS

Edward N. Kresge, Watchung, and Francis P. Baldwin, Summit, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation of abandoned application Ser. No. 778,824, Nov. 25, 1968. This application Feb. 19, 1971, Ser. No. 117,122

Int. Cl. C08d *1/14, 3/04, 3/10*

U.S. Cl. 260—85.3 R 5 Claims

Butyl rubbers of broad molecular weight distribution are prepared using a catalyst system which comprises a halide of the Group II or Group III metals in conjunction with the tetrahalide of a metal selected from Group IV or alternately, boron trifluoride in conjunction with an aluminum compound selected from the group consisting of aluminum tribromide and aluminum triiodide.

3,780,003

POLYMERS OF ALKOXY AND HYDROXY ALKYL ACRYLATES OR METHACRYLATES

Donald Edwin Seymour, London, and Nicholas Mario da Costa, Harlow, England, assignors to Hydron Limited, London, England

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,379

Claims priority, application Great Britain, Oct. 22, 1968, 50,044/68; Dec. 20, 1968, 60,754/68

Int. Cl. C08f *15/16*

U.S. Cl. 260—86.1 E 4 Claims

This invention relates to copolymers and provides copolymer obtainable by copolymerising (a) at least one alkoxy alkyl acrylate or methacrylate with (b) at least one hydroxy alkyl acrylate or methacrylate or at least one different alkoxy alkyl acrylate or methacrylate and optionally with a minor amount of a further monomer. The invention also provides a process for making such copolymers.

3,780,004

PROCESS FOR THE ACCELERATED ALCOHOLYSIS OF ETHYLENE-VINYL ESTER INTERPOLYMERS IN THE SOLID PHASE

John M. Hoyt, Karl Koch, and Mathew Williams, Jr., Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 25, 1972, Ser. No. 292,220

Int. Cl. C08f *27/14*

U.S. Cl. 260—87.3 8 Claims

Process for the alcoholysis of ethylene-vinyl acetate and other ethylene-vinyl ester interpolymers in the solid phase, wherein the hydrolysis is carried out in a reaction medium comprising a mixture of a low-boiling alcohol, a hydrocarbon solvent, and an aprotic dipolar solvent. Use of a reaction medium incorporating a dipolar aprotic solvent provides markedly increased alcoholysis rates as compared with processes utilizing reaction media absent such constituent. Aprotic dipolar solvents which may be used in the alcoholysis medium include dimethylformamide, dimethylacetamide, dimethyl sulfoxide, tetrahydrothiophene dioxide, N-methylpyrrolidone, hexamethylphosphoric triamide, tetramethylurea, and acetonitrile.

3,780,005

CATALYST FOR THE PRODUCTION OF COPOLYMER

Charles Cozewith and Samuel B. Robison, Westfield, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Continuation of abandoned application Ser. No. 822,726, May 7, 1969. This application Oct. 4, 1971, Ser. No. 186,522

Int. Cl. C08f *15/04*

U.S. Cl. 260—88.2 R 8 Claims

A catalyst useful for copolymerizing ethylene and a higher alpha olefin is composed of an alkyl aluminum, and the reaction product of a vanadium compound and an aluminum alkoxy compound.

3,780,006

REMOVAL OF MONOMER FROM ACRYLAMIDE POLYMERS WITH SULFUR DIOXIDE

Maurice L. Zweigle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,640

Int. Cl. C08f *3/90, 15/02, 47/00*

U.S. Cl. 260—89.7 R 5 Claims

Residual unreacted acrylamide is removed from water-soluble and water-swellable polymers and copolymers of acrylamide by treating the polymer with at least one mole of sulfur dioxide per mole of residual monomer. Polymers containing ten parts per million or less of monomer are thereby obtainable.

3,780,007

POLYMERIZATION OF VINYLIDENE FLUORIDE IN AQUEOUS SUSPENSION

John P. Stallings, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 887,754, Dec. 23, 1969. This application Jan. 6, 1972, Ser. No. 215,938

Int. Cl. C08f *3/22*

U.S. Cl. 260—92.1 R 11 Claims

An improved process for polymerizing vinylidene fluoride in aqueous suspension utilizes reaction pressures attained by the application of hydrostatic pressure in addition to that exerted by the monomer at the reaction temperature. The hydrostatic pressure is supplied by the periodic injection of sufficient quantities of water to maintain liquid-full reactor conditions throughout the reaction and to compress and densify the gaseous monomer to a degree which continuously assures its uniform dispersion in the aqueous reaction medium. Optimum yields of high molecular weight, highly crystalline polymer product are obtained

from batch processes in 0.5 to 6 hours. The process is easily adapted to the continuous production of poly(vinylidene fluoride).

3,780,008

IN SITU INITIATOR POLYMERIZATION OF VINYL CHLORIDE

Edwin Studley Smith, Cuyahoga Falls, and Emmett J. Glazer, Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,363
Int. Cl. C08f *1/60, 3/30*
U.S. Cl. 260—92.8 W **3 Claims**

Relates to the reduction in time required for the polymerization of vinyl monomer by initiators formed in situ from a component present in less than all of the monomer in the monomer phase reacting with a component present in the water phase.

3,780,009

PROCESS FOR POLYMERIZING CYCLOOLEFINS TO POLYALKENAMERS

Gino Dall'Asta, San Giuliano Milanese, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,405
Claims priority, application Italy, Dec. 16, 1970, 33,074/70
Int. Cl. C08f *1/56*
U.S. Cl. 260—93.1 **4 Claims**

There is disclosed a process for polymerizing cycloolefins to polyalkenamers in contact with catalysts prepared by mixing transition metal compounds and hydrides or organometallic compounds (which may be halogenated) of metals belonging to Groups I, II, III–A and IV–A of the Mendelyeev Periodic Table, and which also include carbon dioxide as activator of the catalytic mixture.

3,780,010

METAL-COBALT CARBONYL COMPLEXES

James H. Tsai, Sarnia, Ontario, and Glenn H. Anderson, Corunna, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application June 22, 1970, Ser. No. 48,486. Divided and this application Apr. 3, 1972, Ser. No. 240,842
Int. Cl. C08d *3/04, 3/06*
U.S. Cl. 260—94.3 **5 Claims**

Complexes of metal-cobalt carbonyl moiety represented by the empirical formula, $\{X_{y-n}(A)_zM[Co(CO)_4]_n\}$, wherein, for example, X is bromine, A is tetrahydrofuran, M is tin, y is 4, z is an average number of 0.5 to 1, and n is 2 are provided by reacting lower metal halide such as tin dibromide with octacarbonyldicobalt in the presence of tetrahydrofuran. The complexes are useful catalysts in the polymerization of olefins such as norbornadiene.

3,780,011

CATALYST AND CATALYTIC PROCESS

Thomas J. Pullukat, Des Plaines, and Mitsuzo Shida, Barrington, Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,907
Int. Cl. C08f *1/70, 3/06, 3/08*
U.S. Cl. 260—94.9 D **23 Claims**

A catalyst containing chromium oxide supported on a difficultly reducible carrier as its major component and also including metal of the class consisting of titanium, boron, vanadium and mixtures of these in which the catalyst is particularly useful for polymerizing olefins and particularly those of from 2 to 8 carbon atoms so as to predetermine the structure, composition, physical and chemical properties and uses and applications of the resulting polymers by the components of the catalyst, with the result that the polymer desired is produced in the reactor rather than by post-treatment of the polymer or blending of two or more polymers with different properties in an attempt to achieve a blend of the desired properties. The disclosure also includes the method of polymerizing at least one olefin by a particle form or slurry process utilizing the new catalyst with the polymerization taking place in an inert diluent in which the resulting polymer is substantially insoluble at the temperature and pressure of polymerization. The new catalysts can also be used in solution form polymerization.

The catalyst includes chromium oxide plus an oxygenated metal compound of titanium, boron or vanadium or combinations of these. Examples of such catalysts are chromium oxide plus titanium, chromium oxide plus boron, chromium oxide plus vanadium, chromium oxide plus titanium and boron and chromium oxide plus titanium and vanadium. In each of these the titanium, boron and vanadium are oxygenated and preferably prepared by treating the organic compounds, and specifically esters, of these metals with oxygen.

3,780,012

PRODUCTION OF TALL OIL ROSIN PENTAERYTHRITOL ESTERS HAVING IMPROVED COLOR

William Richard Smith, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 18, 1972, Ser. No. 316,146
Int. Cl. C09f *1/04*
U.S. Cl. 260—97.5 **4 Claims**

There is provided a process for improving the color of a tall oil rosin pentaerythritol ester by pretreating a tall oil rosin with from 0.5% to 2.5% paraformaldehyde at a temperature of from 140° C. to 180° C. for from one to three hours, distilling the same, and thereafter effecting the esterification of the so-treated tall oil rosin with pentaerythritol at a temperature ranging from about 250° C. to 300° C.

3,780,013

PREPARATION OF COLOR IMPROVED TALL OIL ROSIN PENTAERYTHRITOL ESTERS

William Richard Smith, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 18, 1972, Ser. No. 316,148
Int. Cl. C09f *1/04*
U.S. Cl. 260—97.5 **4 Claims**

There is provided a process for improving the color of a tall oil rosin pentaerythritol ester by adding a phenol sulfide incrementally to tall oil rosin and pentaerythritol during the said rosin pentaerythritol ester formation.

3,780,014

OCTAPEPTIDE INTERMEDIATE TO GONADOTROPIN RELEASING HORMONE

George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed Sept. 16, 1971, Ser. No. 181,197
Int. Cl. C07c *103/52*; C07g *7/00*; C08h *1/00*
U.S. Cl. 260—112.5 **8 Claims**

The synthesis of the octapeptide Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-amide carrying easily removable protective groups on the Ser, Tyr, Arg and Trp moieties is described; the correspondingly protected heptapeptide is used as the starting material. The octapeptide, upon removal of any protective group on the amino-N of the tryptophane moiety is an important intermediate for the preparation of the gonadotropin-releasing hormone.

3,780,015

PROCESS FOR PREPARING LYSINE CONTAINING PEPTIDES

Ralph F. Hirschmann, Scotch Plains, and Daniel F. Veber, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,384

Int. Cl. C07c *103/52*; C07g *7/00*; C08h *1/00*
U.S. Cl. 260—112.5 4 Claims

A process for preparing peptides containing lysine wherein the terminal amino group of lysine is protected by a pyridyl - 4 - methyloxycarbonyl group during formation of the peptide and removing this group with zinc in acid.

3,780,016

DIPEPTIDE ANTIBIOTIC AND METHOD FOR THE PRODUCTION THEREOF

Richard M. Gale and David H. Lively, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,386

Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 2 Claims

Dipeptide antibiotic, fumarylcarboxyamido - L-2,3-diaminopropionyl-L-alanine is produced by culturing the organism *Streptomyces collinus* NRRL 5332 under submerged aerobic fermentation conditions and is isolated by chromatography of the filtered fermentation broth over activated carbon, followed by chromatography of the active fractions obtained therefrom over acid-washed alumina. The antibiotic displays significant activity against *Salmonella gallinarum* and *Trichomonas vaginalis*.

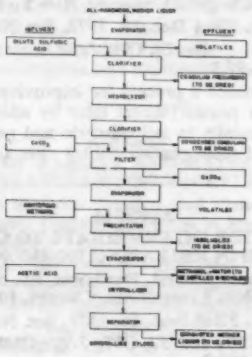
3,780,017

PRODUCTION OF CRYSTALLINE XYLOSE

Howard A. Spalt, Geneva, Chung Ying Chu, St. Charles, and Paul Niketas, Carpentersville, Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Feb. 25, 1971, Ser. No. 118,768

Int. Cl. C13k *9/00*
U.S. Cl. 260—209 R 6 Claims



Method of isolating crystalline xylose from an aqueous plant extract containing monosaccharides of which at least 50 percent is xylose, which comprises concentrating said extract to a first syrup, dissolving said syrup in a water-miscible alcohol, removing insoluble materials from the alcohol solution, evaporation of the alcohol solution to a second syrup, diluting said second syrup with acetic acid to form a solution containing at least 25 percent acetic acid, and separating the crystalline xylose which is precipitated from said solution.

3,780,018

DERIVATIVES OF GENTAMICIN C_1

Masataka Konishi, Yokohama, and Hiroshi Tsukiura, Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed June 26, 1972, Ser. No. 266,170

Int. Cl. C07c *129/18*
U.S. Cl. 260—210 AB 13 Claims

Derivatives of gentamicin C_1 have been prepared which possess substantially improved antibacterial activity. A example of such an agent is 1-[L-(−)-γ-amino-α-hydroxybutyryl]gentamicin C_1 [IIIa, BB–K62].

3,780,019

PRODUCTION OF ERYTHROMYCYLAMINE COMPOUNDS

Eric Wildsmith, Chamberley, England, assignor to Lilly Industries, Ltd., London, England

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,400

Claims priority, application Great Britain, Apr. 13, 1970, 17,529/70

Int. Cl. C07c *129/18*
U.S. Cl. 260—210 E 8 Claims

Erythromycylamine compounds are produced by reduction of an erythromycin oxime, using transition metal ions which are in a low valency state and of suitable redox potential, to the corresponding imine, reduction of the latter producing the desired erythromycylamine.

3,780,020

ERYTHROMYCIN AZINE DERIVATIVES

Delme Evans, Chalfont St. Peter, England, assignor to Lilly Industries Limited, London, England

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,223

Claims priority, application Great Britain, Sept. 30, 1970, 46,402/70

Int. Cl. C07c *129/18*
U.S. Cl. 260—210 E 3 Claims

Erythromycin azine derivatives are useful in the treatment of bacterial, amoebic and trichomonal infections in mammals and birds, and are prepared by reacting erythromycin hydrazone or erythromycin B hydrazone with an appropriate ketone or aldehyde.

3,780,021

CHEMICAL PROCESSES USING ORGANO-THALLIUM COMPOUNDS

Edward C. Taylor, Princeton, N.J., and Alexander McKillop, East Anglia, Norwich, England (both of 1500 Spring Garden St., Philadelphia, Pa. 19101)

No Drawing. Original application Jan. 25, 1968, Ser. No. 700,352, now Patent No. 3,626,018. Divided and this application Feb. 4, 1971, Ser. No. 112,812

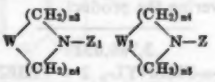
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R 4 Claims

Thallous salts of β-dicarbonyl compounds, prepared by reaction of the β-dicarbonyl compounds with a thallous alkoxide, are treated with alkyl halides to give C-alkyl products in high yield, with acyl halides at room temperature to give C-acyl products, and with acyl halides at low temperatures to give O-acyl products. Thallous phenolates

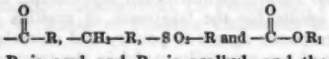
are esterified with acyl or aroyl halides. Anhydrides are also prepared, as are biaryls and bi-sec-alkyls. N-heterocyclics, including purines and pyrimidines, are N-alkylated. Lactams are O-acylated or N-alkylated.

3,780,022
OXYGENATED POLYMETHYLENEIMINES
Gunther S. Fonken, Galesburg, Milton E. Herr, Kalamazoo, and Herbert C. Murray, Hickory Corners, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 666,991, Sept. 11, 1967, now Patent No. 3,556,943, dated Jan. 19, 1971, which is a continuation-in-part of abandoned application Ser. No. 453,204, May 4, 1965. This application Oct. 26, 1970, Ser. No. 84,253
Int. Cl. C07d *41/04, 99/04*
U.S. Cl. 260—239 B **1 Claim**

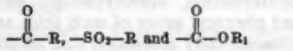
Oxygenated polymethyleneimines of the formulae



wherein n_3 is a whole number from 1 to 3, inclusive, n_4 is a whole number from 3 to 5, inclusive, and n_5 is a whole number from 6 to 8, inclusive, in which the sum of n_3 and n_4 is not less than 5 and not greater than 7 and the sum of n_4 and n_5 is 11; W is selected from the group consisting of carbonyl, hydroxymethylene, acyloxymethylene, methylhydroxymethylene, phenylhydroxymethylene, alkylenedioxymethylene, and cyclicaminomethylene; W_1 is selected from the group consisting of carbonyl, hydroxymethylene, acyloxymethylene and alkylenedioxymethylene; Z_1 is selected from the group consisting of hydrogen, cycloalkyl, cyanomethyl, 2-aminoethyl, 2-guanidinoethyl,



in which R is aryl and R_1 is aralkyl, and the pharmacologically acceptable acid addition salts of those compounds wherein the group, $>N—Z_1$ is an amino radical; and Z is selected from the group consisting of



in which R and R_1 have the meanings given above. The compounds of the above formulae and their acid addition salts are particularly valuable as central nervous system stimulants.

3,780,023
2-ARALKYLAMINO-4,5-DIHYDRO-3H-1,3-BENZODIAZEPINES
John T. Suh, 3709 W. Scenic Drive, 111 N., Mequon, Wis. 53092, and Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223
No Drawing. Filed June 30, 1972, Ser. No. 268,129
Int. Cl. C07d *53/04*
U.S. Cl. 260—239 BD **9 Claims**

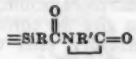
The 2-aralkylamino - 4,5 - dihydro-3H-1,3-benzodiazepines and their pharmaceutically acceptable acid addition salts are central nervous system depressants possessing tranquilizing activity. A compound disclosed is 2-benzylamino-4,5-dihydro-3H-1,3-benzodiazepine hydrochloride.

3,780,024
2-AMINOALKYLAMINO-4,5-DIHYDRO-3H-1,3-BENZODIAZEPINES
John T. Suh, 3709 W. Scenic Drive, 111 N., Mequon, Wis. 53092, and Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223
No Drawing. Filed June 30, 1972, Ser. No. 268,130
Int. Cl. C07d *53/04*
U.S. Cl. 260—239 BD **9 Claims**

The 2 - aminoalkylamino-4,5-dihydro-3H-1,3-benzodiazepines and their pharmaceutically acceptable acid addition salts are antihypertensive agents. Compounds disclosed are 2-N,N-dimethylaminoethylamino-4,5-dihydro-3H-1,3-benzodiazepine dihydrochloride and 2-N,N-dimethylaminopropylamino - 4,5 - dihydro - 3H-1,3-benzodiazepine dihydrochloride.

3,780,025
SILICON COMPOUNDS CONTAINING LACTAM STRUCTURES
John Thompson, Barry, Wales, assignor to Midland Silicones Limited, Reading, Berkshire, England
No Drawing. Filed Apr. 30, 1971, Ser. No. 139,187
Claims priority, application Great Britain, May 4, 1970, 21,377/70
Int. Cl. C07d *41/06;* C08g *47/02, 47/10*
U.S. Cl. 260—239.3 R **11 Claims**

Organosilicon compounds containing lactam structures defined by the general formula



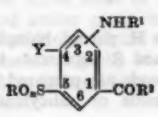
where R is alkylene or alkenylene of 3 to 18 carbon atoms and R′ is alkylene of 2 to 15 carbon atoms are useful as sizing agents for glass fibers and fabrics and as intermediates for preparing modified nylon type materials exhibiting improved physical properties. The lactam structure is introduced into the organosilicon compound by reaction of an organosilicon compound containing ≡SiH with a lactam substituted at the nitrogen atom by an alkenoyl or alkynoyl group.

3,780,026
BIOCHEMICAL ALDOSTERONE SYNTHESIS
Eiji Kondo, Ikeda, Takashi Mitsugi, Senboku, and Kazuo Tori, Kobe, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan
No Drawing. Application Feb. 16, 1971, Ser. No. 115,842, now Patent No. 3,709,789, which is a division of application Ser. No. 790,834, Jan. 13, 1969, now Patent No. 3,631,031, which in turn is a continuation-in-part of abandoned application Ser. No. 555,220, June 6, 1966. Divided and this application Aug. 9, 1972, Ser. No. 279,266
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R **6 Claims**

Corticosterone or esters thereof is treated with the enzymes of Corynespora fungus to obtain novel 18-hydroxycorticosterone inter- and/or intra-molecular acetals and/or acylates thereof accompanied with several monohydroxycorticosterones, then the product is treated with acid or mixture of acid and acylating agent to form ether bridge between positions 11 and 18, finally the 18-deoxyaldosterone derivatives obtained are treated again with the enzymes of Corynespora fungus to prepare aldosterone, 18-dehydroaldosterone, 9α-hydroxy-11β,18-epoxy-4-androstene-3,17-dione.

3,780,027
ANTHRANILIC ACID DERIVATIVES
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,061
Int. Cl. A61k *27/00;* C07d *5/16*
U.S. Cl. 260—239.6 **4 Claims**

Aminobenzoic acids of the structure



having saluretic and diuretic properties are described. These compounds are prepared by amidation of a 2-halo analog thereof or by alkylation of the free amino compound.

3,780,028

DIPHENYLMETHYL 7β - (D - 2,2 - DIMETHYL-3-NITROSO - 5 - OXO - 4 - PHENYL-1-IMIDAZOLIDINYL)-3-METHYL-CEPHEM-4-CARBOXYLATE

Takayuki Naito, 4-24-19 Nishi-shinjuku Shinjuku-ku, Tokyo, Japan; Jun Okumura, 1-21-2-101 Utsukushigaoka, Midori-ku, Yokohama, Japan; and Hideaki Hoshi, 1-24-15 Minami, Meguroku, Tokyo, Japan

No Drawing. Filed July 26, 1972, Ser. No. 275,399

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **1 Claim**

The antibacterial agent cephalexin is prepared from readily available hetacillin by the consecutive steps of nitrosation to give N-nitrosohetacillin, oxidation as with $NaIO_4$ below pH 5 to give the corresponding sulfoxide, conversion to its benzhydryl ester which is then rearranged by heat, preferably with a catalyst present, to give the benzhydryl ester of N-nitrosohetacephalexin, conversion to its free acid and finally cleavage to give cephalexin as by zinc and acetic acid or Raney nickel and hydrogen or, preferably, hydrogen chloride in dioxane.

3,780,029

AZINE COMPOUNDS

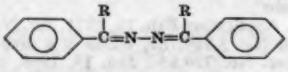
Taras Jaskewycz, 76A Fach St., Box Hill, Victoria 3128, Australia

No Drawing. Filed Oct. 27, 1970, Ser. No. 84,511

Int. Cl. C07d *55/22*

U.S. Cl. 260—240 B **10 Claims**

Substituted benzaldazine compounds derived from



find use as optical brightening agents in the detergent, textile and paints industries. Preferred substituents of the benzyl group are dichloro triazinyl amino and other substituted triazinyl amino groups. Also of use is diamino benzaldazine. One preferred composition is obtained as the reaction product of a mixture of diamino benzaldazine, diamino stilbene and cyanuryl chloride.

Although diamino benzaldazine itself is known many of the substituted compounds are novel.

3,780,030

1,2,3-BENZOXATHIAZIN-4(3H)-ONE 2-OXIDES AND THEIR PREPARATION

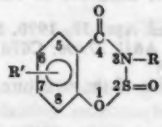
Leo R. Morris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 29, 1971, Ser. No. 194,053

Int. Cl. C07d *95/00*

U.S. Cl. 260—243 R **7 Claims**

1,2,3-benzoxathiazin-4(3H)-one 2-oxides corresponding to the formula



wherein R represents H, phenyl, halophenyl, nitrophenyl, or halonitrophenyl and R′ represents H, halo, dihalo, or phenyl. The compounds are prepared by reacting a corresponding salicylamide or salicylanilide with thionyl chloride, advantageously in the presence of a solvent such as benzene or methylene chloride and, if desired, in the presence of an acid acceptor such as pyridine or a lower trialkylamine. The compounds are useful as pesticides.

3,780,031

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,054

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **6 Claims**

A process for preparing 7-acylamino-7-methoxy cephalosporins is provided which comprises reacting a 7-imino-7-methoxy cephalosporin with a substituted acetic acid halide, and recovering the product.

3,780,032

7-[D-(α-AMINO-α-PHENYL-, 2 - THIENYL- AND 3-THIENYLACETAMIDO] - 3-[S-(1-METHYL - 1,2,3-TRIAZOL - 4 - YL)CARBONYL]THIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,548

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **44 Claims**

7 - [D - (α-amino-α-phenyl-, 2-thienyl- and 3-thienylacetamido)]-3-[S-(1-methyl - 1,2,3 - triazol - 4-yl)carbonyl]-thiomethyl-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria. Also included in this invention are the corresponding pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl and phenacyl esters of such acids and their nontoxic, pharmaceutically acceptable acid addition salts.

3,780,033

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

George G. Hazen, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,051

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **6 Claims**

A process for preparing 7-acylamino - 7 - methoxy cephalosporin is provided which comprises methoxylating a substituted 7 - [1 - loweralkoxyethylideneamino]-cephalosporin, then hydrolyzing to remove the imino linkage. The final products have antibacterial activity.

3,780,034

PROCESS FOR PREPARING SUBSTITUTED CEPHALOSPORINS

Burton G. Christensen, Scotch Plains, and Raymond A. Firestone, Fanwood, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,052

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C **9 Claims**

A process for preparing 7-acylamino-7-methoxy cephalosporins is provided which comprises oxidizing a 7-substituted ethylideneamino-7 - methoxy cephalosporin. The final compounds have antibacterial activity.

3,780,035

PHENOTHIAZINE AND DIBENZOCYCLOHEPTANE DERIVATIVES

Michio Nakanishi, Oita, Takanori Oe, Fukuoka, and Toshio Seki, Oita, Japan, assignors to Yoshitomi Pharmaceutical Ind., Ltd., Osaka, Japan

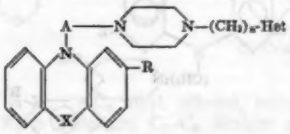
No Drawing. Filed Apr. 10, 1972, Ser. No. 242,769

Claims priority, application Japan, Apr. 10, 1971, 46/22,550

Int. Cl. C07d *93/14*

U.S. Cl. 260—243 A 10 Claims

N,N-disubstituted piperazine compounds of the formula



wherein X is —S—, —CH_2—CH_2— or —CH=CH—, R is H, C_{1-4} alkyl, methoxy, methylthio, acetyl, trifluoromethyl or halogen, A is C_{2-4} alkylene, *n* is 0, 1, 2 or 3 and Het represents furyl, pyridyl or thienyl, and pharmaceutically acceptable acid addition salts thereof are useful as psychotropic agents.

3,780,036

ALKYLTHIOCARBONATES OF S-DIALKYLAMINO HALOTRIAZINES

Pierre Prognon, Portet-sur-Garonne, Robert Scuflaire and Francois Mathey, Ballancourt-sur-Essone, and Oleg Grysckiewic-Trochimowski, La Feret-Alais, France, assignors to Azote et Produits Chimiques S.A., Paris, France

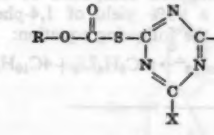
No Drawing. Filed Mar. 10, 1972, Ser. No. 233,710

Claims priority, application France, Mar. 10, 1971, 7108243

Int. Cl. C07d *55/46*

U.S. Cl. 260—249.5 7 Claims

Alkylthiocarbonates of S-dialkylamino halotriazines



wherein

X is a halogen, preferably bromine and especially chlorine;
R is a linear or branched alkyl group of 1 to 12 carbon atoms, preferably of 1 to carbon atoms;
R' is a linear or branched alkyl group of 1 to 5 carbon atoms; and where
R and R' can be the same or different,

and methods for their preparation, and methods of using same as pesticides.

3,780,037

PROCESS FOR PREPARING CEPHALOSPORIN COMPOUNDS

George G. Hazen, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 29, 1971, Ser. No. 203,055

Int. Cl. C07d *99/16, 99/24*

U.S. Cl. 260—243 C 8 Claims

A process is provided for preparing 7-acylamino-7-methoxy cephalosporins, which comprises methylating a substituted 7[1 - loweralkoxyethylideneamino]-7-hydroxy cephalosporin, then hydrolyzing to remove the imino linkage. The final products have antibacterial activity.

3,780,038

PROCESS OF PREPARING AN AMINO THIAZOLYL DISULFIDE USING WET 2-MERCAPTOBENZOTHIAZOLE

Richard Leshin and William L. Cox, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,056

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 7 Claims

In a known process for preparing 2-(4-morpholinodithio)-benzothiazole using 2-mercaptobenzothiazole along with morpholine, sulfur, an inert organic solvent such as isopropyl alcohol and an oxidizing agent, the improvement wherein wet 2-mercaptobenzothiazole is substituted for dry 2-mercaptobenzothiazole.

3,780,039

4-β-HYDROXYETHYL-as-TRIAZINES

Donald L. Trepanier, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 26, 1972, Ser. No. 266,301

Int. Cl. C07d *55/10*

U.S. Cl. 260—248 AS 10 Claims

Substituted 4-(β-hydroxyphenethyl)-1,4,5,6-tetrahydro-as-triazines are prepared by the reaction of a trialkylorthoformate with a substituted 2-(β-hydroxyphenethylamino)alkylhydrazine such as 1-[2-(β-hydroxyphenethylamino)ethyl]-1-methylhydrazine. The novel triazine compounds have pharmacological activity as antidepressants as indicated by their antagonism of reserpine and their potentiation of amphetamine.

3,780,040

2-SUBSTITUTED-3,4-DIHYDROQUINAZOLINES

Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223, and John T. Suh, 3709 W. Scenic Drive, 111 N., Mequon, Wis. 53092

No Drawing. Filed June 2, 1972, Ser. No. 259,076

Int. Cl. C07d *99/06*

U.S. Cl. 260—256.5 5 Claims

The 2-substituted-3,4-dihydroquinazolines and their pharmaceutically acceptable acid addition salts are useful antihypertensive agents. A compound disclosed is 2-[N-(N' - 2 - thienoylpiperazino)] - 3,4 - dihydroquinazoline hydroiodide hydrate.

3,780,041

N(2,4,6-TRIIODO-3-ACETYLAMINO METHYL) PHENYL GLUTARIMIDE OR SUCCINIMIDE

James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 841,604, July 14, 1969, now Patent No. 3,660,408, which is a continuation-in-part of abandoned application Ser. No. 715,583, Mar. 25, 1968. This application Sept. 16, 1971, Ser. No. 181,248

Claims priority, application Canada, Mar. 18, 1969, 46,086

Int. Cl. C07d *29/20*

U.S. Cl. 260—281 5 Claims

Cyclic imides and anilic acids of 2,4,6-triiodoanilines bearing a substituted amino group in the 3-position are prepared by decarboxylation of the corresponding compounds bearing a carboxyl group in the 5-position. The products are useful as intermediates and as cholecystographic agents.

3,780,042

1-METHYL-3-HYDROXYMETHYL-2,4-DIOXO-1,3-DIHYDROQUINAZOLINES

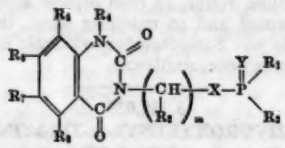
Daniel D. Rosenfeld, East Brunswick, and Martin L. Gorbaty, Elizabeth, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application Apr. 22, 1970, Ser. No. 31,008, now Patent No. 3,681,352. Divided and this application May 22, 1972, Ser. No. 255,473

Int. Cl. C07d *51/48*

U.S. Cl. 260—260 3 Claims

Uracil phosphates containing a fused aromatic ring have been shown to possess insecticidal activity. The structures of these compounds can be characterized as follows:



wherein R_4, R_6, R_7 and R_8 can be the same or different and can equal hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, halogen, cyano, thiocyano, nitro, C_2–C_6 carboalkoxy, C_1–C_6 haloalkyl, C_2–C_6 acyl, C_1–C_6 alkylsulfoxide and sulfone, C_1–C_6 thioalkyl, C_1–C_6 alkoxy, C_1–C_6 alkylamino and C_2–C_6 dialkylamino, C_1–C_6 sulfonamido and carboxylic acid; X is O or S; Y is O or S; *m* is 1 or 2; R_1 is C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_6–C_{10} aryl, C_6–C_{10} aryloxy and C_1–C_6 alkyl; R_2 is C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_6–C_{10} aryl, C_6–C_{10} aryloxy, and C_1–C_6 alkyl; R_3 is hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, C_1–C_6 haloalkyl and C_6–C_{10} haloaryl; R_4 is hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, C_1–C_6 haloalkyl, C_6–C_{10} haloaryl, C_1–C_6 alkylamino, C_2–C_6 dialkylamino, C_2–C_6 acyl, C_1–C_6 alkylsulfoxide or sulfonyl, C_1–C_6 alkoxy, C_2–C_6 alkyloxyalkyl and C_2–C_6 alkylthioalkyl.

3,780,043

ISOQUINOBENZAZEPINES

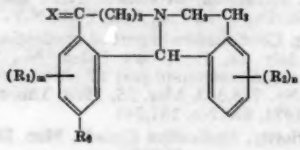
Heinz Werner Gschwend, Millburn, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 882,300, Dec. 4, 1969. This application June 11, 1971, Ser. No. 152,421

Int. Cl. C07d *35/08*

U.S. Cl. 260—286 R 5 Claims

5,6,8,9,10,14b-hexahydroisoquino[1,2 - a][2]benzazepines, e.g. those of the formula



X=H_2, HOH or O

R_0=alkyl, OH, SH, alkoxy, alkylmercapto, alkanoyloxy or alkanesulfonyloxy

$R_{1,2}$=H, R_0, halogen, CF_3, NO_2 or an amino group

m,*n*=1 or 2

and therapeutically acceptable functional derivatives thereof are antidepressants and tranquilizers.

3,780,044

1-[3-[5,11-DIHYDRODIBENZ[b,e][1,4]OXAZEPIN-5-YL]PROPYL]-PHENYLPIPERIDINOLS

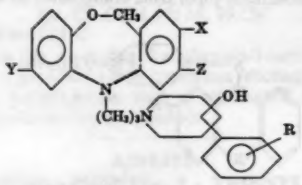
Harry L. Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Sept. 22, 1972, Ser. No. 291,422

Int. Cl. C07d *87/54*

U.S. Cl. 260—293.58 2 Claims

Compounds of the formula



are effective antibacterial agents.

3,780,045

PREPARATION OF ORGANOLITHIUM COMPOUNDS

Constantinos G. Screttas, Athens, Greece, assignor of a fractional part interest to The National Hellenic Research Foundation, Athens, Greece

No Drawing. Filed Aug. 29, 1972, Ser. No. 284,473

Int. Cl. C07d *29/10*

U.S. Cl. 260—293.51 19 Claims

The process of lithiating an organo halide by reacting it with lithium reagent so as to replace one or more halogen atoms of the organo halide with lithium atoms and form lithium halide by-product is improved by employing as the lithium reagent an addition compound of lithium and an aromatic hydrocarbon containing at least 2 aromatic rings that are either joined together, fused together, or conjugated to each other. For example, 1,4-dichlorobenzene can be reacted in tetrahydrofuran at −50° C. with the addition compound of lithium and naphthalene to give a 93% yield of 1,4-phenylene dilithium, according to the following equation:

$$p\text{-}C_6H_4Cl_2+4Li^+C_{10}H_8^{\cdot-}\rightarrow p\text{-}C_6H_4Li_2+4C_{10}H_8+2LiCl$$

3,780,046

HERBICIDAL N-(2-PICOLYL) SUBSTITUTED 2,6-DINITROANILINES

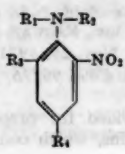
Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Original application Feb. 24, 1970, Ser. No. 18,407, now Patent No. 3,686,230, dated Aug. 22, 1972. Divided and this application June 26, 1972, Ser. No. 268,227

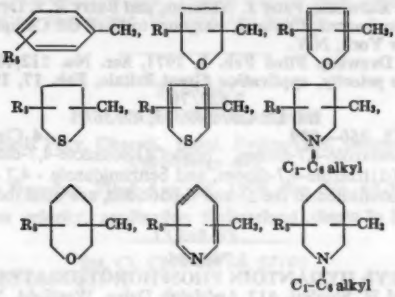
Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 F 4 Claims

The compounds of the subject invention are represented by the following generic formula



wherein R_1 is selected from the group consisting of



wherein R_5 is H; C_1–C_6 alkyl, alkenyl, haloalkyl, halogen, NO_2; R_2 is hydrogen, C_1–C_6 straight or branched chain alkyl, alkenyl, or alkynyl, C_3–C_8 cycloalkyl, C_4–C_{10} cycloalkylalkyl, C_1–C_6 alkoxyalkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 haloalkyl, C_1–C_6 cyanoalkyl, C_2–C_6 acylalkyl, C_1–C_6 alkylmercaptoalkyl, and related sulfoxide and sulfone analogs; R_3 is H, NO_2, halogen, C_1–C_6 alkyl; and R_4 is H, C_1–C_6 alkyl, haloalkyl, cycloalkyl, halogen, CF_3, NO_2, $C{\equiv}N$, $CH_3S(O)_x$, $C_2H_5S(O)_x$, $C_3H_7S(O)_x$, wherein x is 0, 1 or 2, $SO_2NR_6R_7$ wherein R_6 and R_7 can be the same as R_2 or R_6 and R_7 when taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, aziridino, or morpholino ring.

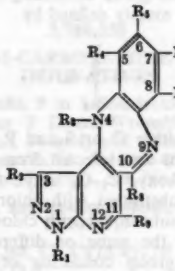
3,780,047

DERIVATIVES OF PYRAZOLO[3',4'-2,3]PYRIDO [4,5-e]b-BENZO-1,5-DIAZEPINES

Theodor Denzel, Nuremberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed July 5, 1972, Ser. No. 268,995
Int. Cl. A61k *27/00;* **C07d** *53/04*
U.S. Cl. 260—296 P **12 Claims**

The new pyrazolo[3',4'-2,3]pyrido[4,5-e]b-benzo-1,5-diazepines having the general formula



are useful as central nervous system depressants. These compounds also increase the intracellular concentration of adenosine-3',5-cyclic monophosphate.

3,780,048

1-HYDROXY-2-(SUBSTITUTED ANILINO) QUINOLIZINIUM BROMIDES

Robert J. Alaimo and Marvin M. Goldenberg, Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

No Drawing. Filed July 12, 1972, Ser. No. 270,960
Int. Cl. A61k *27/00;* **C07d** *39/12*
U.S. Cl. 260—296 B **7 Claims**

1 - hydroxy - 2 - (substituted anilino)quinolizinium bromides are useful as anti-inflammatory agents.

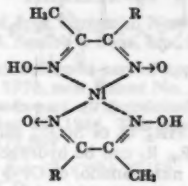
3,780,049

NICKEL COMPLEXES OF DIOXIMES AND PROCESSES FOR THEIR MANUFACTURE

Stefan Hari, Allschwil, and Karl Ronco, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed July 7, 1971, Ser. No. 160,562
Claims priority, application Switzerland, July 27, 1970, 11,325/70
Int. Cl. C07d *91/44*
U.S. Cl. 260—299 **2 Claims**

Nickel complexes of dioximes of the formula



wherein R denotes a heterocyclic radical are useful for coloring plastics and lacquers in fast yellow shades.

3,780,050

2-THIOBENZOXAZOLYL AND 2-THIOBENZOTHIAZOLYL TRIFLUORO BUTENYL COMPOUNDS

Mervin E. Brokke, Moraga, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Nov. 20, 1969, Ser. No. 877,538, now Patent No. 3,697,536, which is a division of application Ser. No. 490,664, Sept. 27, 1965, now Patent No. 3,513,172. Divided and this application Dec. 8, 1971, Ser. No. 208,032
Int. Cl. C07d *85/48, 91/44*
U.S. Cl. 260—306 **2 Claims**

Compounds of the formula

$$CF_2{=}CFCH_2CH_2{-}R$$

in which R is a member selected from the group consisting of 2-thiobenzoxazoyl, 2-thiobenzothiazolyl, phthalimido, and N-thiazolidyl dione. The compounds are useful as nematocides.

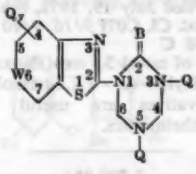
3,780,051

CERTAIN 2-(THIAZOL-2-YL)-3,5-DIOXO-4-METHYL-1,2,4-THIADIAZOLIDINES

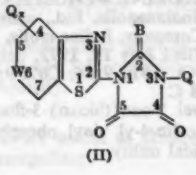
Arnold D. Litt, North Plainfield, and John E. Englehart, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application May 25, 1970, Ser. No. 40,368, now Patent No. 3,096,101. Divided and this application June 9, 1972, Ser. No. 261,458
Int. Cl. C07d *99/02*
U.S. Cl. 260—306.8 F **5 Claims**

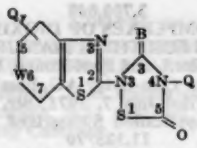
Compounds being selected from the group represented by the following structural formulae:



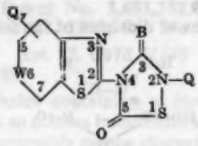
(I)



(II)



(III)



(IV)

where W can be CHR_3, O, or $S(O)_n$ and where *n* can be 0, 1 or 2, or N—R_4. R_3 can be hydrogen or C_1–C_8 alkyl and R_4 can be R_3, nitro, amino, or O. Q at different positions can be different and is selected from the group consisting of hydrogen, C_1 to C_{10} alkyl, C_3 to C_{10} alkenyl, C_4 to C_{10} alkynyl, C_3 to C_8 cycloalkyl, C_1 to C_7 alkoxy, C_3 to C_{10} cycloalkoxy, C_1 to C_{10} alkylthio, C_1 to C_{10} alkylamino, C_2 to C_{20} dialkylamino, C_3 to C_{10} cycloalkylamino, C_2 to C_{20} dicycloalkylamino. Each of the above mentioned hydrocarbon groups may be optionally substituted by halogen, hydroxy, C_1 to C_4 alkoxy, sulphonamido, C_1 to C_4 alkylthio, nitro, cyano, thiocyano or perhaloalkyl; C_6 or C_{10} aryl, C_6 or C_{10} aryloxy, C_6 or C_{10} arylthio where the aforementioned groups may be optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio, halogen, hydroxy, nitro, cyano, or carboalkoxy. Q may also be cyano, sulphonamido, C_1 to C_8 carboalkoxy, perfluoroalkyl, nitro, mercapto, C_4 to C_9 heteroaryl or C_1 to C_{10} acyloxy optionally substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, C_1 to C_4 alkylthio, halogen, nitro, cyano, carboalkoxy, thiocyano or perhaloalkyl. When Q is C_1 to C_{10} alkyl, *y* may take values from O to 6. *y* may take values from 0 to 4 for all other definitions of Q. B may be O or S.

3,780,052

TRIAZOLINE PHOSPHATES

Tony Cebalo and John L. Miesel, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 19, 1972, Ser. No. 273,224
Int. Cl. A01n *9/36*; C07f *9/08*
U.S. Cl. 260—308 C **6 Claims**

A class of 5-oxo(thioxo)-3-fluoroalkyl-4-substituted-Δ^2-1,2,4-triazolin-1-yl vinyl phosphates have insecticidal and acaricidal utility.

3,780,053

PHOSPHORUS DERIVATIVES OF TRIAZOLIN-5-ONES AND THIONES

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 19, 1972, Ser. No. 273,247
Int. Cl. C07f *9/16, 9/40*
U.S. Cl. 260—308 C **6 Claims**

A defined class of novel 5 - oxo(thioxo) - 1,3 - (alkyl, alkenyl or cycloalkyl) - Δ^2 - 1,2,4-triazolin - 4 yl methyl phosphorus derivatives are useful as insecticides, acaricides, and anthelmintics.

3,780,054

TRIAZOLINE 4-PHOSPHATES

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 19, 1972, Ser. No. 273,248
Int. Cl. A01n *9/36*; C07f *9/08*
U.S. Cl. 260—308 C **6 Claims**

A class of novel 5-oxo(thioxo)-3-fluoroalkyl-1-substituted-Δ^2-1,2,4-triazolin-4-yl vinyl phosphates have insecticidal and acaricidal utility.

3,780,055

HERBICIDAL 1H-INDAZOLE-4,7-DIONES AND BENZIMIDAZOLE-4,7-DIONES

Ian D. Entwistle, Peter J. Williams, and Barry R. J. Devlin, Sittingbourne, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,400
Claims priority, application Great Britain, Feb. 17, 1970, 7,527/70
Int. Cl. C07d *49/18, 49/36*
U.S. Cl. 260—309 **4 Claims**

1H-indazole-4,7-diones, benzo(d)isoxazole-4,7-diones, benzo(d)triazole-4,7-diones, and benzimidazole - 4,7 - diones substituted in the 5- and 6-positions, are used for the control of weeds.

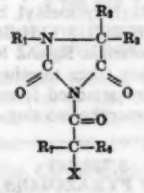
3,780,056

ACYL HYDANTOIN PHOSPHOROTHIOATES

Gophal H. Singhal, 612 Ardsleigh Drive, Westfield, N.J., and Joseph H. Lesser, 3901 62nd St., Woodside, N.Y.

No Drawing. Original application Apr. 23, 1970, Ser. No. 31,405, now abandoned. Divided and this application Dec. 17, 1971, Ser. No. 209,385
Int. Cl. C07f *9/06*
U.S. Cl. 260—309.5 **6 Claims**

Acyl hydantoin derivatives defined by the following structural formula:

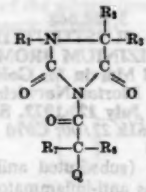


wherein R_1 is one selected from the group consisting of C_1–C_6 lower alkyl, optionally substituted by chlorine, bromine, C_1–C_6 alkoxy and C_1–C_6 alkylthio; C_3–C_6 alkenyl, C_3–C_6 alkynyl, C_3–C_8 cycloalkyl, phenyl optionally substituted with chlorine, bromine, trifluoromethyl or NO_2. R_2 and R_3 can be the same or different and either one is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 chloroalkyl, phenyl optionally substituted with chlorine or nitro and C_1–C_4 alkoxy. X is one selected from the group consisting of chlorine, bromine, fluorine and a moiety defined by

wherein Y can be either O or S and R_4 and R_5 can be the same or different and selected from the group consisting of C_1–C_6 alkoxy, C_1–C_6 alkyl, C_1–C_6 alkylthio, phenyl optionally substituted with chlorine or bromine, phenoxy optionally substituted with chlorine or bromine; R_6 and R_7 can be the same or different and can be selected from the group consisting of hydrogen, and C_1–C_8 alkyl.

Organic compounds represented by this structure have been found to have pesticidal, particularly insecticidal, activity.

Compounds represented by the following structure:



have been found to possess post-emergence herbicidal activity. In this structure, R_1, R_2, R_3, R_7 and R_8 are defined as hereinabove, and Q is one selected from the group consisting of chlorine, bromine and fluorine.

3,780,057

PYRAZOLONE PIGMENTS

Christoph Frey, Oberwil, Basel, Switzerland, assignor to Ciba-Geigy AG

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,332

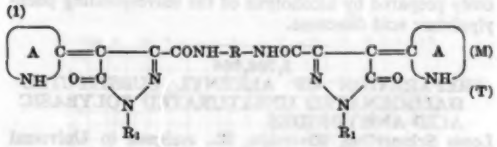
Claims priority, application Switzerland, Sept. 2, 1969, 13,260/69

Int. Cl. C07d *49/14, 57/00*

U.S. Cl. 260—310 A **5 Claims**

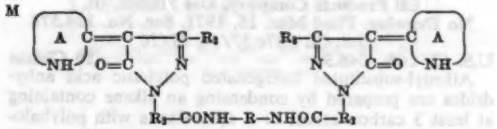
Pyrazolone pigments of the formula

(I)



(M) (T)

M



in which A represents a heterocyclic ring fused to at least one benzene ring, R represents a direct bond or an organic residue, R_1 represents a hydrogen atom, or an alkyl or aryl group, R_3 represents an alkylene or arylene residue and R_3 represents an alkyl or carboxylic acid ester group, are valuable pigments coloring plastics and lacquers in fast yellow to red shades.

3,780,058

2-PYRAZOLINE-1-CARBOXAMIDE SULFONAMIDE DERIVATIVES

Zdzislaw Brzozowski, 9 m 1 Sniadeckich St.; and Stefan Angielski, 10 m 1 Hoene-Wronskiego St., both of Gdansk-Wrzeszcz, Poland; and Czeslaw Wojcikowski, 86 c m 95 Pomorska St., Gdansk-Oliwa, Poland

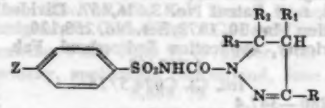
Filed Sept. 16, 1971, Ser. No. 181,009

Claims priority, application Poland, Sept. 19, 1970, P 143,319

Int. Cl. C07d *49/10*

U.S. Cl. 260—310 D **2 Claims**

2-pyrazoline - 1 - carboxamide sulfonamide derivatives having the general formula:



in which Z is hydrogen, halogen or lower alkyl, and R, R_1, R_2, R_3 are each hydrogen or lower alkyl. These sulfonamide compounds have a hypoglycemic effect and are obtained by reacting a 2-pyrazoline derivative such as $HN—CR^2R^3—CHR^1—CR=N$ with an arylsulfonylurea such as $Z—C_6H_4SO_2NHCONH_2$ or with an arylsulfonylisocyanate such as $Z—C_6H_4SO_2NCO$ or by the thermal decomposition of the molecular combination of the 2-pyrazoline derivative and the arylsulfonylurea.

3,780,059

DIBENZOOXAZEPINES AND DIBENZOTHIAZEPINES

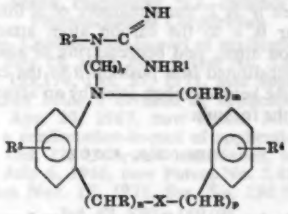
Harry L. Yale and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 17,972, Mar. 9, 1970, now Patent No. 3,657,275, which is a continuation-in-part of abandoned application Ser. No. 551,560, May 20, 1966. This application Aug. 17, 1971, Ser. No. 172,569

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 D **4 Claims**

Therapeutically active compounds utilizable as ataractic agents and as sedatives and hypotensive agents having the formula



wherein R, R^1 and R^2 are hydrogen, lower alkyl, phenyl or phenyl-lower alkyl; R^3 and R^4 are hydrogen, halogen, lower alkyl, trifluoromethyl, or lower alkoxy; X is oxygen or sulfur; *r* is 2 to 5; *m* is 0 or 1; *n* and *p* are each 0, 1 or 2; provided that the sum of $m+n+p$ being from 1 to 3, and that when *m* equals 1 and *n* and *p* are each 0, X is sulfur.

3,780,060

BENZOFURO[2,3-c]PYRROLES

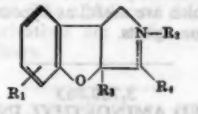
Sylvester Klutchko, Hackettstown, John Shavel, Jr., Mendham, and Maximilian von Strandtmann, Rockaway, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,330

Int. Cl. C07d *27/30, 27/36*

U.S. Cl. 260—326.5 B **6 Claims**

Compounds of the following formula are disclosed:



(I)

wherein

R_1=hydrogen, hydroxy, acyloxy, (1–6c) alkoxy, alkyl or halogen.

R_2=hydrogen, alkyl, substituted alkyl or aralkyl, acyl or non-existant or $CH_3{}^+I^-$ (when double bond is between the positions indicated).

R_3 and R_4=alkyl.

These compounds are useful as skeletal muscle relaxants or as a mild tranquilizer.

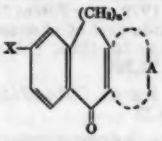
3,780,061

TRICYCLIC KETONIC COMPOUNDS

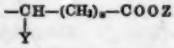
Andre Allais, 65 Rue du Garde-Chasse 93, Les Lilas, France; Lucien Nedelec, 45 Boulevard de l'Ouest 93, Le Raincy, France; Jacques Guillaume, 42 Avenue de Savigny 93, Aulnay-sous-Bois, France; and Daniel Frechet, 45 Rue Lecourbe 75, Paris, France

No Drawing. Filed May 19, 1972, Ser. No. 255,045
Claims priority, application France, May 21, 1971, 18,377
Int. Cl. A61k *27/00*; C07d *63/18, 69/16*
U.S. Cl. 260—332.2 A 20 Claims

Possibly racemic or optically active tricyclic ketonic compounds having the formula



wherein X is hydrogen, halogen or trihalomethyl, *n'* is 2 or 3 and A represents the remainder of a benzene ring or also, when *n'* is 2, the remainder of a thiophene ring whose sulfur is α to the carbon atom attached to the ketone carbon atom, said benzene ring or said thiophene ring being substituted in a position β to the carbon atom attached to the ketone carbon atom by an alkanoic substituent having the formula



where Y is hydrogen or alkyl having 1 to 3 carbon atoms, *n* is 0, 1 or 2 and Z is hydrogen, lower alkyl, lower hydroxyalkyl, acetonide of lower hydroxyalkyl, di-lower alkylamino-lower alkyl, N-heterocyclic-aminoalkyl, alkali metal or alkali earth metal, and the process of preparation. These tricyclic ketonic compounds have a clear analgesic action and a remarkable anti-inflammatory action without a secondary ulcerigenic effect.

3,780,062

INDOLINE DERIVATIVES

Ado Kaiser, New-Frenkendorf, Wolfgang Koch, Riehen, Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,487
Claims priority, application Switzerland, Oct. 30, 1970, 16,050/70
Int. Cl. C07d *27/38*
U.S. Cl. 260—326.11 R 4 Claims

Indoline derivatives substituted in the 1-position with hydrogen, alkanoyl, benzoyl, alkoxy-carbonyl or o-nitrophenylthio, in the 2-position with a carboxy or ester group and the 5- and 6-positions with an alkanoyloxy or alkoxy group, which are useful as hypotensive, antipyretic and anti-Parkinson agents.

3,780,063

SUBSTITUTED AMINOETHYL INDOLES AND METHOD OF PREPARATION

George Edward Van Lear, Suffern, and Albert Carl Dornbush, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 21, 1972, Ser. No. 265,006
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 6 Claims

The preparation and properties of dibromoethylaminoindoles are described. They are useful for their activity against both gram-negative and gram-positive bacteria.

3,780,064

THIOLPULVINIC ACID DERIVATIVES

Joseph Weinstock, Phoenixville, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed June 30, 1972, Ser. No. 267,762
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 10 Claims

Thiolpulvinic acid derivatives having anti-arthritic activity prepared by treating the corresponding pulvinic acid dilactone with an active derivative of the appropriate mercaptan.

3,780,065

PHENYLVULPINIC ACID DERIVATIVES

Blaine M. Sutton, Hatboro, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 188,555, Oct. 13, 1971. This application Aug. 10, 1972, Ser. No. 279,597
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 10 Claims

Phenylvulpinic acid derivatives having anti-arthritic activity prepared by alcoholysis of the corresponding phenylpulvinic acid dilactone.

3,780,066

PREPARATION OF ALKENYL SUBSTITUTED HALOGENATED UNSATURATED POLYBASIC ACID ANHYDRIDES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,578
Int. Cl. C07c *57/14, 61/16*
U.S. Cl. 260—345.9 10 Claims

Alkenyl-substituted halogenated polybasic acid anhydrides are prepared by condensing an alkene containing at least 3 carbon atoms or a cycloalkene with polyhalo-substituted unsaturated polybasic acid anhydrides in the presence of free radical-generating compounds at elevated temperatures to produce the desired products.

3,780,067

PROCESS FOR THE PREPARATION OF 4-CHLORO-N-FURFURYL - 5 - SULFAMOYL-ANTHRANILIC ACID

Haim Yellin and Eliezer Konfino, Ramat Gan, Israel, assignors to Assia Chemical Laboratories Ltd., Tel Aviv, Israel

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,251
Int. Cl. C07d *5/16*
U.S. Cl. 260—347.2 8 Claims

A process for the preparation of 4-chloro-N-furfuryl-5-sulfamoyl-anthranilic acid comprising reacting an alkali salt of 3-sulfamoyl-4,6-dichlorobenzoic acid, in the absence of water, with about 3 equivalents of furfurylamine at a temperature of from 120 to 140° C. and thereafter acidifying the alkali salt obtained to produce the desired compound.

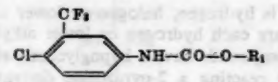
3,780,068

N-(3-TRIFLUOROMETHYL - 4-CHLOROPHENYL)-O-FURFURYL AND TETRAHYDROFURFURYL CARBAMATE

Adolf Hubele, Riehen, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Original application Feb. 4, 1969, Ser. No. 796,571, now Patent No. 3,676,457. Divided and this application May 30, 1972, Ser. No. 258,120
Claims priority, application Switzerland, Feb. 6, 1968, 1,765/68
Int. Cl. C07c *5/16*
U.S. Cl. 260—347.4 2 Claims

The invention relates to compounds of the general formula



wherein R_1 represents an aralkyl or aralkenyl residue or a phenyl radical having 4 or 5 substituents or a 5- to 6-membered heterocycle which may be bound over an alkyl residue. The compounds are used for combating various types of pests, preferably bacteria and fungi.

3,780,069

DIKETOCORIOLIN B AND PROCESS FOR THE PRODUCTION THEREOF

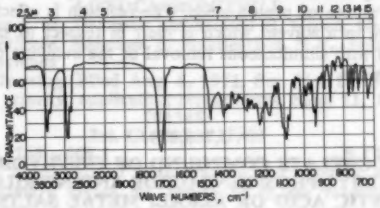
Hamao Umezawa and Tomio Takeuchi, Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Feb. 10, 1971, Ser. No. 114,246

Claims priority, application Japan, Feb. 13, 1970, 45/11,965

Int. Cl. C07d *1/18*

U.S. Cl. 260—348 C 2 Claims



Diketocoriolin B having anti-bacterial and anti-tumor activities and process for producing the same by culturing aerobically a microorganism capable of producing coriolin B in a nutrient medium, recovering the accumulated coriolin B and oxidizing said compound with an oxidizing agent.

3,780,070

4-AZIDO-17α-ALKINYL-4-GONEN-17β-OL-3-ONES AND METHOD FOR THEIR PREPARATION

Elliot L. Shapiro, Cedar Grove, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Sept. 21, 1972, Ser. No. 291,113

Int. Cl. C07c *173/10*

U.S. Cl. 260—349 10 Claims

4 - azido - 17α - alkinyl - 4 - gonene - 17β - ol - 3-ones having contraceptive activity are prepared by treating the corresponding 4,5-oxido-4,5-dihydro derivative with an alkali metal azide in slightly acidic aqueous alkanol. A preferred compound is 4-azido - 17α - ethinyl-4-estren-17β-ol-3-one.

3,780,071

PROCESS FOR THE MANUFACTURE OF 2,5-DIACYL AMINO-1,4-BENZOQUINONES

Stefan Hari, Allschwil, and Karl Ronco, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed June 9, 1971, Ser. No. 151,530

Claims priority, application Switzerland, June 11, 1970, 8,808/70

Int. Cl. C07c *103/02*

U.S. Cl. 260—396 R 9 Claims

Process for the manufacture of 2,5-diacylamino-1,4-benzoquinones, especially 2,5 - dibenzoylamino-1,4-benzoquinones by acylation of 2,5-diamino-1,4-benzoquinones with carboxylic acid halides in the presence of a Friedel-Crafts catalyst.

3,780,072

3-ENOLETHERS OF Δ¹-3-KETO-5α-STEROIDS AND PROCESS FOR THEIR PREPARATION

Rinaldo Gardi, Carlo Britanza, and Pier Paolo Castelli, Monza, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 830,841, June 5, 1969, which is a continuation-in-part of application Ser. No. 640,419, May 22, 1967, both now abandoned. This application Nov. 26, 1971, Ser. No. 202,572

Claims priority, application Germany, Nov. 18, 1966, P 15 93 698.8

Int. Cl. C07c *169/32*

U.S. Cl. 260—397.45 27 Claims

New ethers of 3-hydroxy-$\Delta^{1,3}$-5α-steroids, namely 3-enol ethers of Δ¹-3-keto-5α-steroids, are prepared by submitting to pyrolysis tri-ethers of 1α,3,3-tri-hydroxy-5α-steroids optionally in the presence of an alcohol or a phenol.

3,780,073

3-OXIMES OF 19-NORTESTOSTERONE ESTERS

Arvin P. Shroff, Piscataway, N.J., assignor to Ortho Pharmaceutical Corporation

No Drawing. Continuation-in-part of applications Ser. No. 843,201, July 18, 1969, now Patent No. 3,629,415, and Ser. No. 193,174, Oct. 27, 1971, said application Ser. No. 843,201 being a division of application Ser. No. 635,308, Apr. 20, 1967, now Patent No. 3,532,689, which is a continuation-in-part of applications Ser. No. 502,384, Oct. 22, 1965, now abandoned, and Ser. No. 563,081, July 6, 1966, now Patent No. 3,437,674. This application Nov. 15, 1971, Ser. No. 198,992

Int. Cl. C07c *169/08*

U.S. Cl. 260—397.5 8 Claims

3-oximes of 17-α-ethynyl 19-nortestosterone esters have post-coital activity for the suppression of reproduction.

3,780,074

PREPARATION OF ALKADIENOIC ACID ESTERS

Michael G. Romanelli, New York, N.Y., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of applications Ser. No. 808,672 and Ser. No. 808,673, both Mar. 19, 1969, now Patents Nos. 3,670,029 and 3,670,032 respectively. This application June 3, 1971, Ser. No. 149,774

Int. Cl. C07c *67/00, 69/52*

U.S. Cl. 260—410.9 R 12 Claims

Esters of alkadienoic acids are prepared through the reaction of C_4–C_{12} aliphatic, acyclic, conjugated diolefins with a C_1–C_{20} monohydroxy alcohol and either gaseous carbon monoxide or gases containing carbon monoxide in the presence of a catalyst system including zerovalent palladium. A preferred catalyst system is comprised of a zerovalent palladium material and a phosphine activator. The reaction is conducted at moderate temperature and pressure conditions. The alkadienoic acid esters and their hydrogenated derivatives are useful as solvents, brake fluids and plasticizers.

3,780,075

SEPARATION PROCESS

Emmanuel Joseph Dufault, Pittsford, and David Andrew Heeks, Rochester, N.Y., assignors to Syron Corporation, Rochester, N.Y.

Filed Feb. 5, 1971, Ser. No. 112,952

Int. Cl. C11b *1/12*

U.S. Cl. 260—412.6 10 Claims

The stickwater produced in processes for centrifugally separating fat bearing animal material, such as low tem-

perature mechanical rendering processes, is split into a high fat fraction and a low fat fraction by heating the stickwater to a temperature above about 220° F., preferably from 260° F., to 300° F., and holding the heated stickwater quiescent in a pressurized separator, whereby the stickwater separates into an upper layer containing most of the fat and insoluble defatted solids in the stickwater and a lower layer comprising water and dissolved defatted solids.

3,780,076

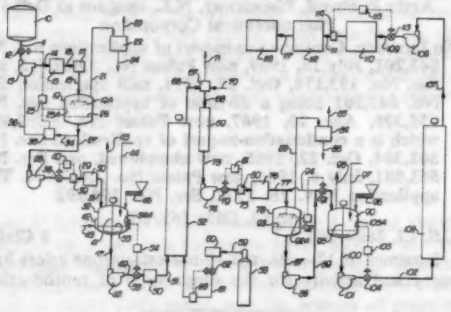
OIL TREATMENT PROCESS

Basil T. Papahronis, Fullerton, and Walter P. Gibble, La Habra, Calif., assignors to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed Feb. 18, 1971, Ser. No. 116,456

Int. Cl. C07f 5/10

U.S. Cl. 260—420 **17 Claims**



A continuous method of treating refined unbleached soybean oil to produce a stable frying oil. The method comprises, in the following sequence, preheating the oil, degassing the oil, heating the oil to a higher temperature, adding a copper chromite catalyst to the oil, heating the oil to the catalytic reaction temperature and contacting it with carbon dioxide, degassing and cooling the oil, filtering the oil, and bleaching and deodorizing the oil.

3,780,077

PROCESS FOR PREPARING LEAD (IV)-ACETATE

Werner Schwarze, Frankfurt, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed July 14, 1971, Ser. No. 162,682

Claims priority, application Germany, July 17, 1970, P 20 35 559.3

Int. Cl. C07f 7/24

U.S. Cl. 260—436 **10 Claims**

Process for preparing lead (IV)-acetate by oxidizing lead (II)-acetate in the presence of cobalt ions, manganese ions or mixtures of cobalt and manganese ions wherein the improvement consists essentially of reacting the lead (II)-acetate with about 10–40% peracetic acid by weight at a temperature below about 110° C. to form lead (IV)-acetate. The lead (IV)-acetate is useful for oxidizing certain organic chemicals.

3,780,078

METHOD OF PRODUCING π-ALLYLIC NICKEL COMPLEXES

Konstantin Mikhailovich Anikeev, Sredneokhtinsky prospekt 25/19, kv. 18; Boris Davidovich Babitsky, ulitsa Krasnogo Kursanta 7, kv. 9; Alexi Matveevich Verblovsky, Onezhskaya ulitsa 4, kv. 31; Tamara Nikolaevna Kozhenets, Moskovsky prospekt 79, kv. 39; Vitaly Abramovich Kormer, ulitsa Zheleznovodskaya 62, kv. 2; Mark Iosifovich Lobach, Annikov prospekt 28, kv. 52; and Viktoria Vladimirovna Markova, ulitsa Bolotnaya 11, kv. 18, all of Leningrad, U.S.S.R.; and Ervin Mikhailovich Rivin, Leninsky prospekt 17, kv. 44, Voronezh, U.S.S.R.

No Drawing. Filed July 28, 1971, Ser. No. 166,988

Claims priority, application U.S.S.R., Aug. 3, 1970, 1456941

Int. Cl. C07f 15/04

U.S. Cl. 260—439 R **4 Claims**

A method of producing π-allylic nickel complexes by reacting nickel tetracarbonyl with diene hydrocarbons in the presence of proton acids. The reaction is effected on heating in a solvent which is inert in respect to said reagents with simultaneous removal of the evolving carbon monoxides.

3,780,079

IRON CHELATE COMPOUND OF TRIS(HYDROXYMETHYL)PHOSPHINE OXIDE AND NITRILOTRIACETIC ACID OR ALKALI METAL SALTS

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Application July 13, 1970, Ser. No. 54,662, now Patent No. 3,655,573, which is a continuation-in-part of abandoned application Ser. No. 680,011, Nov. 2, 1967. Divided and this application Sept. 27, 1971, Ser. No. 184,204

Int. Cl. C07f 15/02

U.S. Cl. 260—439 R **3 Claims**

Mixtures of tris(hydroxymethyl)phosphine oxide, and nitrilotriacetic acid as well as the alkali metal salts thereof, exhibit marked synergism as sequestrant compositions over a broad pH range. The sequestrant compositions are useful as additives for detergents, metal cleaning baths, peroxide compositions and dyes. The chelate products are useful in the field of agriculture for the introduction of trace elements into plant life and especially in the treatment of iron chlorosis in plants.

3,780,080

SILYL MALEATES AND POLYSILOXANE MALEATES

Abe Berger and Terry G. Selin, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Original application May 17, 1971, Ser. No. 144,306. Divided and this application Dec. 18, 1972, Ser. No. 316,063

Int. Cl. C07f 7/08, 7/18

U.S. Cl. 260—448.2 B **2 Claims**

Silyl maleates and fumarates and polysiloxane maleates and fumarates useful as glass sizing agents are prepared in accordance with the present invention. The silyl maleates and polysiloxane maleates and fumarates are formed by reacting either the cis- or trans-1,2-bis-carbalkoxyethylenes having an unsaturated alkenyl group therein with a hydrogen silane or hydrogen polysiloxane in the presence of a platinum catalyst.

3,780,081
1-(CYANOALKOXY) PHENOXY-3-AMINO-2-PROPANOLS

David James Le Count and Christopher John Squire, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 1, 1972, Ser. No. 248,809
Claims priority, application Great Britain, May 7, 1971, 13,720/71
Int. Cl. C07c *121/78*
U.S. Cl. 260—465 E 6 Claims

New 1-amino-3-cyanoalkoxyphenoxy- or 3-acylalkoxyphenoxy-2-propanol derivatives, processes for their manufacture and pharmaceutical compositions containing them. The compounds possess β-adrenergic blocking activity and are useful in the treatment of heart diseases and other conditions in man. Representative of the compounds disclosed is 1-m-(3-cyanopropoxy)phenoxy - 3 - isopropylamino-2-propanol.

3,780,082
PROCESS FOR THE PREPARATION OF 4-OXOCAPRONITRILE

Johannes J. M. Deumens and Siemen H. Groen, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,512
Claims priority, application Netherlands, Sept. 11, 1970, 7013453
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.1 5 Claims

Schiff bases derived from acetone and aliphatic lower alkyl primary amine are employed in the reaction of acrylonitrile and an excess of acetone in a liquid medium in the disclosed process for the preparation of 4-oxocapronitrile. The catalysts have a boiling point below 150° C. and are easily recovered from the reaction mixture. The product 4-oxocapronitrile is a starting material in the preparation of α-pipecoline.

3,780,083
PROCESS FOR PREPARING α-MONO-CYANOETHYLATED BUTANONE

Johannes J. M. Deumens, Geleen, and Petrus A. M. J. Stijfs, Oirsbeek, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,319
Claims priority, application Netherlands, Feb. 19, 1971, 7102202
Int. Cl. C07c *121/02, 121/34*
U.S. Cl. 260—465.1 8 Claims

Schiff bases derived from butanone and an aliphatic primary amine are catalysts in the preparation of α-monocyanoethylated butanone by reacting acrylonitrile with at least an equimolar quantity of acrylonitrile in the presence of an acid. The α-mono-cyanoethylated butanones, such as 4-methyl-5-oxohexane nitrile and 5-oxoheptane nitrile are produced with only minor amounts of contaminant's that are easily removed. The α-mono-cyanoethylated butanones are useful for the preparation of diamines, ketocarboxylic acids or keto-amides.

3,780,084
PREPARATION OF CYANOALKANE CARBOXYLIC ACIDS

Sijbrandus E. Schaafsma, Beek, and Johannes H. A. Hofman, Maastricht, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,535
Claims priority, application Netherlands, May 1, 1971, 7105979
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.4 7 Claims

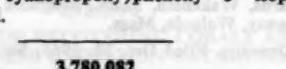
Omega-cyanoalkane carboxylic acids are prepared in the high yields by reacting a 1-hydroxycycloalkyl peroxide with the corresponding alkanone and hydrogen cyanide at a reaction mixture pH of between about 3–6 in the presence of a water soluble cuprous cyanide complex as catalyst in the disclosed process.

3,780,085
MALONONITRILE OXIME DERIVATIVES

John E. Engelhart, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Original application Apr. 15, 1970, Ser. No. 28,982, now Patent No. 3,694,482. Divided and this application June 15, 1972, Ser. No. 263,033
Int. Cl. C07c *121/30, 121/00*
U.S. Cl. 260—465.4 7 Claims

Derivatives of malononitrile oxime characterized by the following structural formula:



wherein X can be oxygen or sulfur; R_1 is taken from the group consisting of OR_2, SR_3, NR_4R_5 and C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl or C_3–C_{10} cycloalkyl; R_2, R_3, R_4 and R_5 can be hydrogen or C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl or C_3–C_{10} cycloalkyl. The above-mentioned C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl and C_3–C_{10} cycloalkyl in R_1, R_2, R_3, R_4 and R_5 may be unsubstituted or substituted by halogen, nitrile, nitro, thiocyano, perhalo, C_1–C_4 alkoxy and C_1–C_4 thioalkyl.

3,780,086
PROCESS FOR PRODUCING ADIPONITRILE BY DIMERIZATION ON AN AMALGAM

Freddy Marechal, Wezembeek-Oppen, and Henri Lefebvre, Jemeppe-sur-Sambre, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed June 29, 1971, Ser. No. 158,054
Claims priority, application France, June 29, 1970, 7024085
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 A 6 Claims

A high effective rate of utilization of the active metal of an amalgam used in dimerization or polymerization reactions is obtained by removing the chromium and nickel ions from the liquid phase containing the material to be dimerized or polymerized prior to contact thereof with the amalgam.

3,780,087
GLYCOLATES FROM ACETALS

Jonathan Morris Wiegman, Charleston, and Robert Keith Barnes, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 25, 1972, Ser. No. 283,743
Int. Cl. C07c *69/66*
U.S. Cl. 260—468 K 8 Claims

Glycolates are produced by pyrolysis of the corresponding acetal of glyoxal in contact with a strong acid catalyst.

3,780,088
ALPHA-UREIDOCYCLOHEXADIENYLALKYLENE CARBOXYLIC ACIDS

Raymond Curry Erickson, Metuchen, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Original application Nov. 17, 1969, Ser. No. 877,478, now Patent No. 3,720,664. Divided and this application Oct. 19, 1972, Ser. No. 298,974
Int. Cl. C07c *127/14*
U.S. Cl. 260—468 J 5 Claims

This invention relates to α-ureidocyclohexadienylalkylene-penicillins as well as their salts and compositions containing them, which are useful an antibacterial agents.

3,780,089

SUBSTITUTED UREIDOPHENYL THIOUREAS

Arno Widdig, Blecher, Engelbert Kuhle, Bergisch Gladbach, Klaus Sasse, Schildgen, Hans Scheinpflug, Leverkusen, Ferdinand Grewe, Burscheid, and Helmut Kaspers and Paul-Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

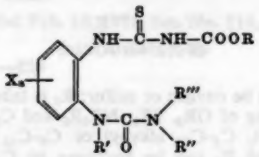
No Drawing. Filed Nov. 13, 1970, Ser. No. 89,500

Claims priority, application Germany, Nov. 29, 1969, P 19 60 029.4

Int. Cl. C07c *157/06*

U.S. Cl. 260—470 4 Claims

Ureidophenyl thioureas of the formula:



(I)

in which

each X independently stands for a halogen atom, alkyl with 1–4 carbon atoms or alkoxy with 1–4 carbon atoms,

n stands for 0, 1 or 2,

R stands for alkyl with 1–12 carbon atoms,

R′ and R″ each stands independently for a hydrogen atom or alkyl with 1–4 carbon atoms, and

R‴ stands for a hydrogen atom, alkyl with 1 or 2 carbon atoms (which may carry at least one substituent selected from halogen, cyano, alkoxy with up to 4 carbon atoms and alkoxycarbonyl with up to 5 carbon atoms), alkyl with 3 to 18 carbon atoms (which carries at least one substituent selected from halogen, cyano, alkoxy with up to 4 carbon atoms and alkoxycarbonyl with up to 5 carbon atoms), cycloalkyl with 5 to 8 ring carbon atoms, aralkyl (the aryl moiety of which may carry at least one substituent selected from halogen, lower alkyl and lower alkoxy), phenyl (which may carry at least one substituent selected from halogen, lower alkyl and lower alkoxy), acyl with up to 18 carbon atoms (which may be substituted by halogen and/or lower alkyl), aroyl (which may carry at least one substituent selected from halogen, lower alkyl and lower alkoxy), alkylsulfonyl with up to 18 carbon atoms, arylsulfonyl (which may carry at least one substituent selected from halogen, amino, lower alkyl and lower alkoxy) or dialkylamino with up to 4 carbon atoms, which possess fungicidal properties and which may be produced by conventional methods.

3,780,090

N-HALOGENOACYL PHENYL AMINO ACID ESTERS

Keiichiro Akiba, Ikeda, Takeo Satomi, Amagasaki, Akira Fujinami, Ashiya, Yasuhisa Asano, Minoo, Nobuyuki Kameda, Takarazuka, Akihiko Mine and Naganori Hino, Toyonaki, and Kohshi Tateishi, Minoo, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka-shi, Osaka, Japan

No Drawing. Filed Mar. 15, 1972, Ser. No. 235,044

Claims priority, application Japan, Mar. 15, 1971, 46/14,609

Int. Cl. C07c *103/32*

U.S. Cl. 260—471 A 4 Claims

N-halogenoacylanilino acids and ester derivatives are disclosed. The compounds exhibit herbicidal properties.

3,780,091

ARYL-N-ALKYLCARBAMATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 29, 1971, Ser. No. 217,696

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C 1 Claim

Novel substituted aryl-N-alkylcarbamates are disclosed. The compounds are useful as insecticides.

3,780,092

MONOMERIC EMULSION STABILIZERS

Carlos M. Samour, Wellesley Hills, and Mildred C. Richards, Wakefield, Mass., assignors to The Kendall Company, Walpole, Mass.

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,899

Int. Cl. C07c *101/12, 101/16, 101/20*

U.S. Cl. 260—482 R 3 Claims

A novel class of monomeric emulsion stabilizers consists of certain types of ethylenically-unsaturated radicals covalently linked to a quaternary nitrogen atom which in turn is covalently linked to a lipophilic radical. Such monomers will polymerize with other ethylenically-unsaturated radicals forming self-stabilized, surfactant-free polymeric dispersions.

3,780,093

PERFLUOROALKYL COMPOUNDS

Horst Jaeger, Bettingen, and Paul Schaefer, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,545

Claims priority, application Switzerland, Aug. 24, 1970, 12,591/70

Int. Cl. C07c *69/52*

U.S. Cl. 260—486 H 2 Claims

Perfluoroalkyl compounds are provided in which the perfluoroalkyl radical is bonded through a linear or cyclic aliphatic radical to the carboxylic group of an aliphatic unsaturated carboxylic acid. These products and their polymerization products are useful for finishing various substrates, especially for the production of aliphatic finishes on paper, leather, non-wovens and textiles.

3,780,094

PREPARATION OF ESTERS OF AROMATIC ALCOHOLS

Jack L. Herz, Scarsdale, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed May 15, 1969, Ser. No. 825,078

Int. Cl. C07c *67/00*

U.S. Cl. 260—488 CD 16 Claims

A novel procedure is provided for synthesizing esters of aromatic alcohols by oxidizing an alkyl- or polyalkyl-aromatic hydrocarbon in the presence of a carboxylic acid anhydride, under controlled conditions. High conversions of the desired aromatic ester product are obtained and such product can be readily converted to the corresponding alcohol by hydrolysis. The ester products are used as organic intermediates in the preparation of the corresponding alcohols of known commercial utility. The esters are also useful in the preparation of perfumes and are excellent solvents in organic reactions.

3,780,095

ACYLATED ANILINO-CARBOXYLIC ACIDS AND THEIR SALTS

Kurt Klemm, Allensbach, Walter Krastinat and Richard Riedel, Constance, and Wolfgang Schoetensack, Hegne, Germany, assignors to BYK-Gulden Lomberg Chemische Fabrik GmbH, Constance, Germany

No Drawing. Filed Apr. 8, 1970, Ser. No. 26,113

Int. Cl. C07c *101/44, 101/72*
U.S. Cl. 260—518 A 22 Claims

Acylated anilino-carboxylic acids which are effective chloretics and their manufacture.

3,780,096

PROCESS FOR RECOVERING COBALT AND MANGANESE OXIDATION CATALYSTS

Thomas F. Johnson, Penn Hills Township, Allegheny County, and James H. Schelling, Franklin Township, Westmoreland County, Pa., assignors to United States Steel Corporation

No Drawing. Filed July 1, 1971, Ser. No. 159,014

Int. Cl. C07c *63/02*; C01g *45/00, 51/00*
U.S. Cl. 260—524 R 2 Claims

A mineral acid is added to a mixture containing an oxidation catalyst and a carboxylic acid to precipitate the oxidation catalyst.

3,780,097

PURIFICATION OF ALKALI METAL SALTS OF AROMATIC CARBOXYLIC ACIDS

Richard C. Doss and Donald G. Kuper, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,177

Int. Cl. C07c *51/48, 51/42*
U.S. Cl. 260—525 10 Claims

Water insoluble impurities are separated from an aqueous mixture of an alkali metal salt of an aromatic carboxylic acid containing such impurities in suspension by contacting the aforesaid mixture with a cationic acrylamide copolymer, e.g. a quaternary salt of a vinylpyridine/acrylamide copolymer. Filtration and settling time rates are significantly improved by the use of said cationic acrylamide copolymers.

3,780,098

PROCESS FOR OXIDIZING CYCLOHEXANONE AND CYCLOOCTANONE

Wyndham Morris, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 7, 1969, Ser. No. 805,369

Claims priority, application Great Britain, Mar. 13, 1968, 12,232/68

Int. Cl. C07c *51/18, 55/04*
U.S. Cl. 260—531 R 16 Claims

Production of aliphatic α-ω-dicarboxylic acids e.g. adipic acid by oxidizing aliphatic ketones or ketone/alcohol mixtures in liquid phase with molecular oxygen gas using a catalyst consisting of a combination of a vanadium compound with a compound of at least one of the metals cobalt, iron, manganese or copper. Acetic acid is a preferred solvent. The process is advantageously operated in two or more steps, with the temperature in the first step higher than in subsequent steps.

3,780,099

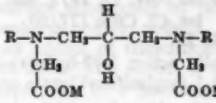
PROCESS FOR PREPARING CHELATING AGENTS

Patricia M. Scanlon, Arlington, Mass., and Jon C. Thunberg, Amherst, N.H., assignors to W. R. Grace & Co., New York, N.Y.

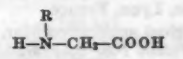
No Drawing. Original application June 14, 1971, Ser. No. 152,987, now Patent No. 3,689,544. Divided and this application Apr. 25, 1972, Ser. No. 247,392

Int. Cl. C07c *99/00*
U.S. Cl. 260—534 E 6 Claims

A chelating agent having the formula



wherein; R is an alkyl group having about 1–20 carbon atoms, hydrogen, —CH_2CH_2OH, or —CH_2COOM; and M is an alkali metal cation, is prepared by; (a) adjusting the pH of a first aqueous system consisting essentially of water and an amino acid having the formula



or an alkali metal salt of the acid to about 6–10.5 to form a second aqueous system consisting essentially of the alkali metal salt of the amino acid dissolved in water, and adjusting the temperature of the second aqueous system at about 65–105° C.; and (b) admixing epichlorohydrin with the second aqueous system while; (i) maintaining the pH of the resulting mixture at about 6–10.5; and (ii) maintaining the temperature of the resulting mixture at about 65–105° C. for about 30–180 minutes to form a third aqueous system consisting essentially of an aqueous solution of the chelating agent.

3,780,100

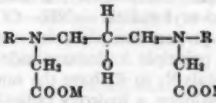
PROCESS FOR PREPARING CHELATING AGENTS

Patricia M. Scanlon, Arlington, Mass., and Jon C. Thunberg, Amherst, N.H., assignors to W. R. Grace & Co., New York, N.Y.

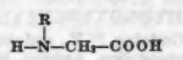
No Drawing. Original application June 14, 1971, Ser. No. 152,987, now Patent No. 3,689,544. Divided and this application Apr. 25, 1972, Ser. No. 247,391

Int. Cl. C07c *99/00*
U.S. Cl. 260—534 E 6 Claims

A chelating agent having the formula



wherein; R is an alkyl group having about 1–20 carbon atoms, hydrogen, —CH_2CH_2OH, or —CH_2COOM; and M is an alkali metal cation, is prepared by; (a) adjusting the pH of a first aqueous system consisting essentially of water and an amino acid having the formula



or an alkali metal salt of the acid to about 6–10.5 to form a second aqueous system consisting essentially of the alkali metal salt of the amino acid dissolved in water, and adjusting the temperature of the second aqueous system at about 65–105° C.; and (b) admixing epichlorohydrin with the second aqueous system while; (i) maintaining

the pH of the resulting mixture at about 6–10.5; and (ii) maintaining the temperature of the resulting mixture at about 65–105° C. for about 30–180 minutes to form a third aqueous system consisting essentially of an aqueous solution of the chelating agent.

3,780,101

BICYCLIC COMPOUNDS

Hermann Bretschneider and Kraft Hohenlohe-Oehringen, Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 19, 1971, Ser. No. 200,602

Int. Cl. C07c *127/00*

U.S. Cl. 260—553 D **6 Claims**

Hypoglycemically active 1-[2-hydroxy-2,3,3-trimethyl-7-anti-norbornyl]-3-(arylsulfonyl)ureas are described.

3,780,102

SUBSTITUTED CINNAMAMIDES

Michel Bayssat, Louis Fontaine, and Marcel Grand, Lyon, France, assignors to Lipha Lyonnaise Industrielle Pharmaceutique, Lyon, France

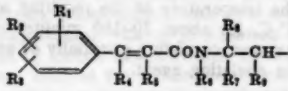
No Drawing. Original application Mar. 31, 1970, Ser. No. 24,359, now Patent No. 3,659,014. Divided and this application Sept. 10, 1971, Ser. No. 179,572

Claims priority, application France, Apr. 2, 1969, 6910054

Int. Cl. C07c *103/30*

U.S. Cl. 260—558 R **23 Claims**

The present invention concerns new cinnamamides of formula:



(I)

in which R_1 and R_3 are hydrogen, a lower alkyl or lower alkoxy radical; R_2 is hydrogen, a halogen, a lower alkyl or lower alkoxy radical; R_4 and R_5 are hydrogen or a lower alkyl radical; R_6 is hydrogen, a lower alkyl or lower hydroxyl alkyl radical aryl radical or

$$C_2H_5NH—COO—C_2H_4—$$

R_7 and R_8 are hydrogen, a low alkyl or lower hydroxy, alkyl radical; R_9 is hydrogen, a lower alkyl or lower hydroxy alkyl radical; R_{10}=halogen, a hydroxy radical except when R_1 to R_9=H and R_1, R_2, R_3=CH_3O, R_4=CH_3 and R_5 to R_9=H, a lower alkyl radical, a lower hydroxyalkyl radical, NH_2—COO, a lower alkyl radical —NH—COO and aryl radical —NH—COO. The invention is relative to preparation processes and medicine containing as active principle a cinnamamide of Formula I, in which the radicals R_1 to R_9 have the same meanings as above and R_{10}=halogen, a hydroxy radical—except when R_1, R_2, R_3=CH_3O, R_4=CH_3 and R_5 to R_9=H—lower hydroxy alkyl, NH_2COO, lower alkyl —NHCOO—aryl—NHCOO.

3,780,103

ALKYLHYDROXYBENZYLAMIDES

Martin Knell, Ossining, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 30, 1967, Ser. No. 626,927

Int. Cl. C07c *103/38*

U.S. Cl. 260—559 A **7 Claims**

N-(alkylhydroxybenzyl)alkan- or alkenamides, which are stabilizers of organic materials susceptible to oxidative deterioration, are obtained through condensation of an alkylhydroxybenzyl alcohol and an alkanenitrile, alkanedinitrile, or alkenenitrile, the product in the last instance being optionally subjected to an addition reaction with an alkane mercaptan. A typical embodiment is N-(3,5-di-t-butyl-4-hydroxybenzyl)dodecanamide.

3,780,104

PHENOXY ACETALS

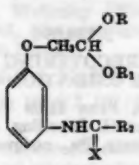
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,541

Int. Cl. C07c *103/38*

U.S. Cl. 260—562 R **10 Claims**

Meta-phenoxy acetals having the formula



in which X is oxygen or sulfur, R and R_1 are independently lower alkyl, R and R_1 taken together are ethylene or trimethylene, R_2 is alkyl, monocyclohexylamino, monoalkylamino, monoalkenylamino, dialkylamino, alkoxy, alkylthio, haloalkyl, substituted-phenyl wherein said substituents are methyl, monochloro or dichloro. The compounds are useful as herbicides.

3,780,105

ALKANOYLACETANILIDES

Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Application Dec. 1, 1969, Ser. No. 881,323, now Patent No. 3,629,336, which is a continuation-in-part of abandoned application Ser. No. 487,054, Sept. 13, 1965. Divided and this application Mar. 12, 1971, Ser. No. 123,893

Int. Cl. C07c *103/38*

U.S. Cl. 260—562 K **2 Claims**

Ligands or co-ordinating agents which will form a co-ordination complex with a metal and which also include a silver halide developing function particularly a paradihydroxyphenyl silver halide developing function or a substituted derivative thereof, thereby making them additionally useful in photography.

3,780,106

PROCESS FOR PREPARING 5-(γ-TERTIARYAMINO-PROPYLIDENE-DIBENZO[a,d]CYCLOHEPTENES

David Taub and Robert D. Hoffsommer, Jr., Metuchen, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of abandoned application Ser. No. 837,359, June 27, 1969. This application June 29, 1972, Ser. No. 267,348

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.8 TC **2 Claims**

5 - (γ - tertiaryaminopropylidene) - dibenzo[a,d]cycloheptenes, such as amitriptyline or cyclobenzaprine are prepared via a Grignard reaction with a 5-N-alkylimino-5H-dibenzo[a,d]-10,11-dihydrocycloheptene alkiodide salt or 5-N-alkylimino-5H-dibenzo[a,d]cycloheptene alkiodide salt. These latter intermediates are prepared from 10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-one or the corresponding 10,11-unsaturated compound by reaction with an alkylamine to yield the corresponding alkylimine which is then treated with an alkyliodide. The compounds of the present invention are useful as antidepressants or tranquilizers in the treatment of mental disorders.

3,780,107

CONTINUOUS PROCESS FOR PRODUCING LONG CHAIN AMINES

Bohdan S. Polanskyj, South Orange, and Jack M. Solomon, West Caldwell, N.J., Daniel R. Chisholm, Mount Vernon, N.Y., and Bernard R. Bluestein, Glen Rock, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,470
Int. Cl. C07c *87/04, 87/14, 87/127*
U.S. Cl. 260—583 P 8 Claims

Long chain amines are produced in a continuous process at atmospheric pressures by reacting long chain C_8 to C_{26} monochlorinated or monobrominated hydrocarbons with a stoichiometric excess of lower molecular weight alkyl, alkylene or alkanol amines by adding reactants so as to continuously maintain said stoichiometric excess of amine and continuously withdrawing from the liquid reaction mixture long chain amine product and unreacted ingredients and separating said product therefrom.

3,780,108

CAGED KETONE

John R. E. Hoover, Glenside, and Robert John Stedman, Paoli, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Application Oct. 4, 1966, Ser. No. 584,077, now Patent No. 3,536,761, which is a continuation-in-part of abandoned application Ser. No. 408,360, Nov. 2, 1964. Divided and this application Oct. 7, 1970, Ser. No. 78,930
Int. Cl. C07c *49/36*
U.S. Cl. 260—586 A 1 Claim

Disclosed is the compound

hexacyclo[6.2.1.1^{3,6}.0^{4,10}.0^{5,9}]dodecan-11-one

and its use as an intermediate in the preparation of the corresponding caged amines having virus inhibiting properties.

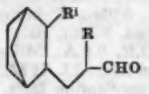
3,780,109

2-ALKYL-3-(2-NORBORNYL)-PROPANALS

Alfred A. Schleppnik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,879
Int. Cl. C07c *47/34*
U.S. Cl. 260—598 9 Claims

2-alkyl-3-(2'-norbornyl)-propanals characterized by the structural formula



wherein R^1 represents hydrogen or methyl, and R represents a lower alkyl group are prepared by a crossed aldol condensation of 5-norbornene-2-carboxaldehyde or norbornane-2-carboxaldehyde with aliphatic aldehyde in a basic medium. The resulting product is dehydrated to form the 2 - alkyl-3-(2'-norborn(en)yl)-prop-2-en-1-als which are subsequently hydrogenated. The compounds have very pleasant, strong and long lasting woody odors and are useful as compounds in fragrance compositions.

3,780,110

METHOD FOR PREPARING 3-FLUORO-SALICYLALDEHYDE

Walter A. Gay, Cheshire, and Maurice A. Raymond, Northford, Conn., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,276
Int. Cl. C07c *45/00*
U.S. Cl. 260—600 9 Claims

An integrated method for preparing 3-fluorosalicylaldehyde by reacting ortho-fluorophenol with a boron-containing compound and a formaldehyde source material.

3,780,111

REDUCTION OF TRIPHENYLPHOSPHINE OXIDE WITH IRON TO TRIPHENYLPHOSPHINE

David A. Young and Kent C. Brannock, Kingsport, Tenn.; said Young assignor of a fractional part interest to Eastman Kodak Company

No Drawing. Filed July 28, 1972, Ser. No. 276,270
Int. Cl. C07f *9/50*
U.S. Cl. 260—606.5 P 5 Claims

A process for reducing trihydrocarbon phosphorus oxide to trihydrocarbon phosphorus by reacting the trihydrocarbon phosphorus oxide with a halo-complexing agent forming an adduct of trihydrocarbon phosphorus dihalide with the agent. The adduct is heated to its decomposition temperature in a halobenzene solvent having a boiling point higher than the decomposition temperature of the adduct to separate the trihydrocarbon phosphorus dihalide from the complex. The dihydrocarbon phosphorus dihalide is then reduced with iron forming trihydrocarbon phosphorus.

3,780,112

SUBSTITUTED ETHYLENE BIS(PHOSPHINE OXIDES)

Kurt Weinberg, Bergen, N.J., and James E. McKeon, Westchester, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 9, 1972, Ser. No. 279,270
Int. Cl. C07f *9/02*
U.S. Cl. 260—606.5 P 10 Claims

A process for the production of substituted ethylene bis(phosphine oxides) which comprises contacting a substituted phosphine halide with diethylene glycol at a temperature of −25° C. to 100° C. in the presence of an acid acceptor to produce the corresponding phosphinous ester, and thereafter heating the phosphinous ester at temperatures of 100° to 400° C.

3,780,113

PREPARATION OF ORGANIC SULPHUR COMPOUNDS

Donald J. Martin, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 825,951, May 19, 1969. This application Dec. 10, 1971, Ser. No. 208,047
Int. Cl. C07c *149/06*
U.S. Cl. 260—609 R 8 Claims

Hydrogen sulfide and an essentially hydrocarbon compound having an olefinic linkage are reacted in the presence of a free radical initiating compound and a pentavalent phosphorus compound.

3,780,114

METHOD FOR THE PREPARATION OF 1,2,4,5-TETRAHYDROXYBENZENE

Sylvain Achiel Raoul Dewaele, Evergem, Belgium, assignor to S.A. Texaco Belgium N.V., Brussels, Belgium

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,139
Int. Cl. C07c *37/06*
U.S. Cl. 260—621 H 4 Claims

1,2,4,5-tetrahydroxybenzene is prepared by the catalytic hydrogenation of 2,5-dihydroxy-p-benzoquinone over a hydrogenation catalyst in a mutual solvent in yields of 70 to 90 mole percent. The starting material is readily prepared from hydroquinone. The final product finds utility, e.g. as a dispersant.

3,780,115

PROCESS FOR PRODUCING NITROPARAFFINS

Pierre Lhonore, Douai, Guy Cohen, Paris, and Bernard Jacquinot, Douai, France, assignors to Societe Chimique de la Grande, Paroisse, Azote et Produits Chimiques, Paris, France

Filed Oct. 19, 1972, Ser. No. 299,173
Claims priority, application France, Oct. 29, 1971, 38,964
Int. Cl. C07c 79/04
U.S. Cl. 260—644 9 Claims

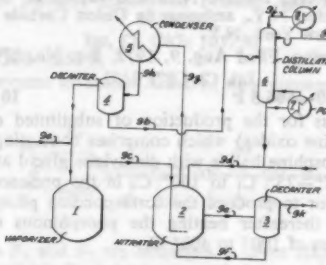
The invention relates to a process for the production of nitroparaffins from hydrocarbons higher than methane, by nitration with nitrogen peroxide in the presence of oxygen, introduced in the form of air, wherein the nitration is carried out at a pressure which is between 8 and approximately 14 bars, the reactant gases being preheated under the reaction pressure and introduced into the reaction zone between 150 and 330° C., the gaseous effluents originating from the nitration zone being subjected to a rapid cooling or quenching.

3,780,116

METHOD FOR NITRATION OF AROMATIC HYDROCARBON COMPOUNDS

Prakash Nath Sahgal, Baroda, India, assignor to Zaverchand & Company, Baroda, Gujarat, India

Filed June 15, 1972, Ser. No. 262,935
Int. Cl. C07c 79/10
U.S. Cl. 260—645 6 Claims



A process and apparatus for nitration of an aromatic hydrocarbon such as benzene or toluene in which the hydrocarbon is vaporized and bubbled through aqueous nitric acid in a reaction vessel at a temperature which may vary from 50 to 100° C. A mixture of nitric acid and nitrated hydrocarbon which is formed is continuously withdrawn from the reaction vessel and fed to a separator where the nitrated hydrocarbon is separated and withdrawn and the nitric acid is returned to the reaction vessel.

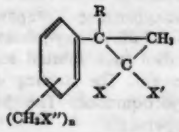
3,780,117

HALOMETHYL SUBSTITUTED DERIVATIVES OF DIHALOPHENYLCYCLOPROPANE

Herman A. Bruson, Woodbridge, and Howard L. Plant, Milford, Conn., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Original application Sept. 30, 1968, Ser. No. 763,932, now Patent No. 3,598,857. Divided and this application Jan. 22, 1971, Ser. No. 108,958
Int. Cl. C07c 25/00
U.S. Cl. 260—650 R 3 Claims

Halomethyl substituted derivatives of dihalophenylcyclopropanes having the formula:



wherein X, X', X'' are each selected from the group consisting of chlorine, bromine, iodine; R is selected from the group consisting of hydrogen or alkyl of from 1 to 5 inclusive carbon atoms and *n* is an integer of from 1 to 2 inclusive; are prepared by reacting formaldehyde and an acid, such as hydrobromic acid, with a dihalocarbene adduct of styrene.

3,780,118

PREPARATION OF DIHYDROCARBON BERYLLIUM COMPOUNDS

David R. Carley, 2824 Cedarcrest Ave. 70816; Byron R. Lowrance, Rte. 2, Box 229 70815; and Jesse Roger Mangham, 2035 Glendale Ave. 70808, all of Baton Rouge, La.

No Drawing. Filed Dec. 17, 1962, Ser. No. 246,867
Int. Cl. C07f 3/00
U.S. Cl. 260—665 R 6 Claims

This invention relates to an improved process for the preparation of organoberyllium compounds and more particularly to improvements in the method of preparing organoberyllium compounds with the use of Grignard reagents.

3,780,119

PROCESS FOR CATALYTIC INTRA-MOLECULAR REARRANGEMENT OF DIMETHYL NAPHTHALENE

Keizo Shimada, Takeo Nishikawa, Toshiaki Harada, and Shizuo Nagahama, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed May 31, 1972, Ser. No. 258,405
Int. Cl. C07c 5/24
U.S. Cl. 260—668 A 4 Claims

Isomers of dimethyl naphthalene are produced in high yields by catalytic intra-molecular rearrangement at above 260° C. using a specific mordenite catalyst containing a metal form of mordenite, the metal being selected from Li, Na, K, Mg, Ca, Sr, Ba, Zn and Al, and being in an amount above 20% by weight. The above dimethyl naphthalene is selected from 1,5-dimethylnaphthalene, 1,6-dimethyl naphthalene, 2,6-dimethyl naphthalene and mixtures thereof.

3,780,120

PROCESS FOR MANUFACTURING LINEAR ALKYL BENZENES

Benedetto Calcagno, Milan, Roberto Canavesi, Bollate, and Natale Bertolini, Milan, Italy, assignors to Società Italiana Resine S.I.R. S.p.A., Milan, Italy

No Drawing. Filed Mar. 22, 1972, Ser. No. 236,999
Claims priority, application Italy, Mar. 23, 1971, 22,112/71
Int. Cl. C07c 3/52
U.S. Cl. 260—671 B 6 Claims

Linear alkyl benzenes are prepared, by catalytic alkylation of benzene by chloro-paraffins, in a process in which recycled paraffins are subjected to hydrogenation to ensure that a high-grade product with respect to chlorine content and odor is produced.

3,780,121

DISPROPORTIONATION OF ALKYLAROMATICS

Robert M. Suggitt, Wappingers Falls, John T. Brandenburg, Hopewell Junction, and John M. Crone, Jr., Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Sept. 2, 1971, Ser. No. 177,483
Int. Cl. C07c 3/62
U.S. Cl. 260—672 T 15 Claims

Alkylaromatic hydrocarbons are disproportionated in the presence of a composite catalyst composed of a hydrogen mordenite and a Group I–B metal. The composite catalyst may additionally contain a Group VI–B metal.

3,780,122

ALKYLAROMATIC TRANSALKYLATION UTILIZING ALUMINA DEFICIENT MORDENITE

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation of application Ser. No. 69,976, Sept. 4, 1970, which is a continuation-in-part of application Ser. No. 729,550, May 16, 1968, both now abandoned. This application July 10, 1972, Ser. No. 270,395

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T 14 Claims

Alkylaromatic hydrocarbons are transalkylated utilizing a mordenite type catalyst wherein the silica to alumina mole ratio of the mordenite has been increased to greater than about 10:1.

3,780,123

DISPROPORTIONATION OF ALKYLBENZENES

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed May 15, 1972, Ser. No. 253,637

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T 19 Claims

Alkylbenzenes are disproportionated in the presence of a composite catalyst composed of a hydrogen mordenite, alumina and a sulfided Group VIII metal.

3,780,124

MOLECULAR SIEVE 13X CATALYZED ISOMERIZATION OF α-PINENE—IMPROVEMENT OF CATALYST ACTIVITY BY IODINE

Curry Beach Davis, Panama City, Fla., assignor to Arizona Chemical Company, New York, N.Y.

No Drawing. Filed Feb. 26, 1973, Ser. No. 335,843

Int. Cl. C01b *33/28;* C07c *13/00;* C09f *3/02*

U.S. Cl. 260—675.5 8 Claims

α-Pinene, β-pinene, or turpentine is isomerized at temperatures ranging from about 140° C. to 200° C. in the presence of a potassium 13X zeolite-iodine catalyst mixture to yield predominantly dipentene and minor amounts of terpinolene and camphene.

3,780,125

ISOMERIZATION OF ALPHA-PINENE-CONTAINING FEED BY ZEOLITE

Edward Andrew Takacs, 4 Ave. C, South Norwalk, Conn. 06854

No Drawing. Filed Dec. 18, 1972, Ser. No. 316,147

Int. Cl. C01b *33/28;* C07c *13/00;* C09f *3/02*

U.S. Cl. 260—675.5 10 Claims

There is disclosed a process for preparing dipentene by effecting the isomerization of a pinene containing feed at a temperature of from about 140° C. to about 200° C. for more than about one-half hour in the presence of less than about 10%, based on the weight of the said feed, of a zeolite molecular sieve catalyst of either the 13X- or 13Y-type containing an alkali metal cation, such as sodium, potassium, lithium, rubidium, or cesium, said catalyst being activated by adjusting the pH of an aqueous slurry to a range from about 5.0 to about 10 prior to use.

3,780,126

OXIDATIVE DEHYDROGENATION IN THE PRESENCE OF CRYSTALLINE, PROVOSKITE TYPE MANGANESE COMPOUNDS

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 743,600, July 10, 1968. This application Mar. 26, 1971, Ser. No. 128,540

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 D 10 Claims

Process for the oxidative dehydrogenation of dehydrogenatable organic compounds by heating the compounds with oxygen (and optionally halogen) in the presence of a solid crystalline catalyst containing manganese and at least two other metals, one of which is a light metal having an oxidation state of 1^+ or 2^+. Manganese compounds of the perovskite structure are preferred catalysts.

3,780,127

CATALYTIC PROCESS FOR DEHYDRATION OF ALCOHOLS

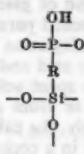
Frank G. Young, Charleston, and Leroy R. Pennington, Winfield, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 2, 1972, Ser. No. 293,767

Int. Cl. C07c *1/24*

U.S. Cl. 260—682 9 Claims

A process for the dehydration of alcohols, e.g., of ethanol to produce ethylene comprising vaporizing ethanol in the presence of a non-linear polymer catalyst composition consisting essentially of a recurring unit having the following structural formula:



wherein R is an unsubstituted or substituted straight or branched chain divalent saturated alkylene radical having 2 to 10 carbon atoms or an unsubstituted or substituted divalent aryl radical having 1 to 3 benzene rings wherein the substituents for the alkylene radical can be halogen or a phenyl radical and the substituents for the aryl radical can be halogen or straight or branched chain saturated alkyl radicals having 1 to 5 carbon atoms; and recovering ethylene.

3,780,128

SYNTHETIC LUBRICANTS BY OLIGOMERIZATION AND HYDROGENATION

Ronald L. Shubkin, Oak Park, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Nov. 3, 1971, Ser. No. 195,443

Int. Cl. C07c *5/02*

U.S. Cl. 260—683.9 19 Claims

Oligomers of normal —C_{6-16} alpha-olefins as lubricants can be made by reacting C_{6-16} normal-alpha-olefins or mixtures thereof at a temperature of from about 10–60° C. using an alcohol-promoted boron trifluoride catalyst in which boron trifluoride is used in molar excess of the alcohol. Preferably, additional boron trifluoride is injected into the reaction liquid phase during the course of the oligomerization. Stability of the resultant product is improved by catalytic hydrogenation. The products have a low pour point and high viscosity index.

3,780,129

DEHYDROGENATION PROCESS

Heinz G. Friedrich, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,761

Int. Cl. C07c *5/18*

U.S. Cl. 260—683.3 13 Claims

An improved dehydrogenation process for the production of diolefins by the dehydrogenation of aliphatic hydrocarbons by contacting the hydrocarbon compound with a catalyst containing chromic oxide, alumina, nickel and lithium.

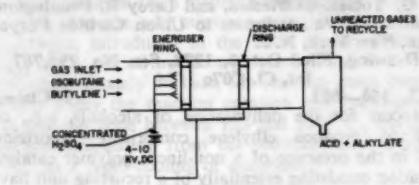
3,780,130
GAS-FOG ALKYLATION WITH STRONG SULFURIC ACID AND PROMOTER

Jaydee W. Miller, Wallingford, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 150,607, June 7, 1971, now Patent No. 3,717,686, dated Feb. 20, 1973. This application May 5, 1972, Ser. No. 250,718

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.63 **11 Claims**



A process for alkylation of gaseous C_2–C_5 monoolefin with gaseous C_4–C_8 branched paraffin comprises contacting the mixed gases at alkylation conditions with a fog or mist of strong sulfuric acid and a promotor. The promoter may be red oil or spent acid from a conventional sulfuric acid alkylation or from a previous run of the present process. Preferably, the catalyst and hydrocarbon reactants are maintained in a concurrent flow. For C_3 or C_4 acyclic monoolefin and C_4 or C_5 isoparaffin, the preferred alkylation conditions include a temperature in the range of about 30–80° F. and a pressure about atmospheric (e.g., 5–25 p.s.i.a., typically 14–20 p.s.i.a.). The feed mole ratio, paraffin to olefin, can be in the range of 1:1 to 60:1, typically 2:1 to 30:1. Liquid paraffin (e.g., isobutane) can be injected into the reactor in order to control the reaction temperature. Preferably, the liquid acid droplets have a mean diameter in the range of 5–50 microns, typically 10–25 microns. An advantage of the present process is a substantial savings in distillation costs required to separate isobutane from the product.

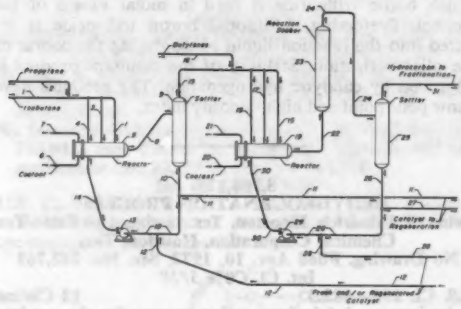
3,780,131
ISOPARAFFIN ALKYLATION WITH A LIGHTER OLEFIN AND SUBSEQUENTLY WITH A HEAVIER OLEFIN

Jay E. Sobel, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 7, 1972, Ser. No. 269,907

Int. Cl. C07c *3/52, 3/54*

U.S. Cl. 260—683.45 **13 Claims**



A process for alkylating an isoparaffin with a lighter olefin and a heavier olefin by contacting the isoparaffin with the lighter olefin and a first alkylation catalyst in a first alkylation zone, contacting the hydrocarbon effluent from the first alkylation zone with the heavier olefin and a second alkylation catalyst in a second alkylation zone, and recovering the product of the process from the hydrocarbon effluent from the second alkylation zone.

3,780,132
PRIMER COMPOSITION CONTAINING EPOXIDE RESINS, PHENOL FORMALDEHYDE RESIN, TETRAALKYL SILICATES, AND SILANE COUPLING AGENTS

James E. Lohr, Wallingford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 170,288, Aug. 9, 1971. This application Dec. 22, 1971, Ser. No. 211,085

Int. Cl. C08g *45/08*

U.S. Cl. 260—831 **7 Claims**

The primer composition is utilized as a primer for aluminum sheets which are bonded together with an epoxy adhesive or as a primer for an aluminum sheet which is bonded to an aluminum honeycomb structure; the primer is a solution containing a heat reactive phenol/formaldehyde resin, one or more epoxy resins, a tetraalkyl silicate and a silane coupling agent.

3,780,133
DIPHENOL CONTAINING POLYESTERS DERIVED FROM TRIS (2 - HYDROXYALKYL)ISOCYANURATES

John M. Kolyer, Convent, and Albert A. Kveglis, Pine Brook, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Oct. 30, 1968, Ser. No. 771,999, now Patent No. 3,632,837. Divided and this application May 24, 1971, Ser. No. 146,477

Int. Cl. C08g *17/06, 17/14, 20/32*

U.S. Cl. 260—857 R **11 Claims**

Incorporation of a diphenol in a polyester reaction product of a tris(2-hydroxyalkyl)isocyanurate and a polycarboxylic acid avoids gel formation and provides a thermo-oxidatively stable polyester with excellent adhesion properties.

3,780,134
VINYL HALIDE RESIN COMPOSITIONS CONTAINING ABS AND MBS GRAFT POLYMERS

Thor J. G. Lonning, Suffield, Conn., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 30, 1972, Ser. No. 257,860

Int. Cl. C08f *41/12*

U.S. Cl. 260—876 R **4 Claims**

Polyblends of vinyl halide resin, graft copolymers having a styrene/acrylonitrile superstrate and a butadiene substrate, and graft copolymers having a styrene/methyl methacrylate superstrate and a butadiene substrate. Film and sheet material formed from such blends are characteristically semi-rigid and display unusually high flex endurance.

3,780,135
INTRODUCING CATALYST INTO A REACTOR

Robert J. Perry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

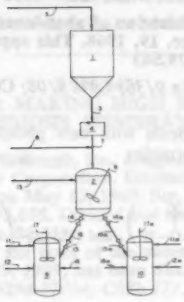
Filed July 21, 1970, Ser. No. 56,931

Int. Cl. C08f *1/42*

U.S. Cl. 260—878 B **7 Claims**

A material charge required in a batch reaction is introduced into and maintained in a dispersion zone in uni-

form, low-concentration, dispersed form until required in the batch reaction zone, at which time the entire



charge is introduced into said batch reaction zone in a single step.

3,780,136

PROCESS TO REDUCE THE AMOUNT OF LOW-MOLECULAR-WEIGHT AND AMORPHOUS POLYMERS FORMED DURING THE PREPARATION OF OLEFIN COPOLYMERS

Hsbet M. Khelghatian, Springfield, Pa., James L. Jezl, St. Charles, Ill., and Louise D. Hague, Wilmington, Del., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,943

Int. Cl. C08f *1/38, 1/44, 15/04*

U.S. Cl. 260—878 B **4 Claims**

Pretreating of a catalyst under polymerization conditions with a single olefin prior to its use for copolymerizing a mixture of olefins reduces the low-molecular-weight and amorphous material formed during the polymerization process.

3,780,137

METHOD FOR SEPARATING NICKEL CONTAMINANT FROM HYDROGENATED CONJUGATED DIENE POLYMERS

Howard L. Hassell, San Leandro, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,297

Int. Cl. C08d *5/02;* **C08f** *27/24*

U.S. Cl. 260—880 B **7 Claims**

A method is provided for removing nickel contamination from organic polymers by contacting them with gaseous carbon monoxide at temperatures from about −20° to +200° C. to form nickel carbonyl, then volatilizing the nickel carbonyl from the polymer. Optionally, hydrogen sulfide may also be present in the carbon monoxide to promote carbonylization of nickel compounds.

3,780,138

METHOD FOR SEPARATING METAL CONTAMINANT FROM ORGANIC POLYMERS

Howard L. Hassell, San Leandro, James C. Watson, Torrance, and Benjamin W. Shaw, San Pedro, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,526

Int. Cl. C08f *27/24*

U.S. Cl. 260—880 B **8 Claims**

A method is provided for separating metal catalyst contaminants from organic polymers, typically polymers derived from dienes and/or vinyl arenes, by treatment with an aqueous solution of citric acid, an oxidant, and optionally, a lower aliphatic alcohol, then separating the aqueous phase to remove the contaminating metal. Alternatively, the polymer may be contacted with an oxidant before treatment with the aqueous solution.

3,780,139

SEGMENT COPOLYMERS OF 1,3-DIENES AND AROMATIC VINYL COMPOUNDS

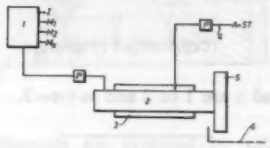
Hubert Sutter, Cologne-Flittard, Karl Nothen, Leverkusen, and Friedrich Haas, Cologne-Buchheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 812,080, Apr. 1, 1969. This application Oct. 18, 1971, Ser. No. 190,101

Claims priority, application Germany, Apr. 25, 1968, P 17 70 261. 3

Int. Cl. C08f *19/06, 19/08, 15/04*

U.S. Cl. 260—880 B **4 Claims**



A process for continuously producing segment copolymers from 1,3-dienes and aromatic vinyl compounds in the absence of a solvent with lithium organic compounds as catalysts by using a self-cleaning multiple shaft screw extruder as the polymerization vessel.

3,780,140

ETHYLENE/CARBON MONOXIDE POLYMER COMPOSITIONS

Clarence Frederick Hammer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,792

Int. Cl. C08f *29/12*

U.S. Cl. 260—884 **11 Claims**

Copolymers of certain amounts of ethylene, carbon monoxide and one or more termonomers copolymerizable therewith to produce solid products. The copolymers are useful as molding resins and as blending resins. Blends of these copolymers with solid organic polymers such as polyvinyl chloride wax, etc., are compatible and are useful as molding resins. These blends may be used, for example, to produce flexible films and rigid or semirigid articles.

3,780,141

CROSSLINKED VINYL HALIDE POLYMERS AS FLAME RETARDANT ADDITIVES FOR THERMOPLASTICS

Jung Il Jin, Irvington, and Paul Kraft, Spring Valley, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,632

Int. Cl. C08f *29/22, 29/24*

U.S. Cl. 260—897 C **15 Claims**

There are disclosed fire retardant polyblends comprising thermoplastic polymers intimately admixed with a

crosslinked copolymer of a vinyl halide, preferably a crosslinked vinyl chloride copolymer. These fire retardant polyblends may be utilized in a variety of coating, impregnating and especially molding applications wherein it is desired to provide fire retardancy to the resulting end product.

3,780,142

FLAME-RETARDANT POLYOLEFIN COMPOSITIONS

Yoshikatsu Ogawa, Takatsuki, Haruhiko Hisada, Yao, and Takeshi Kasahara, Sakai, Japan, assignors to Marubishi Yuka Kogyo Kabushiki Kaisha, Osaka, Japan

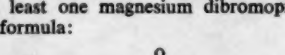
No Drawing. Filed Sept. 9, 1971, Ser. No. 179,202

Claims priority, application Japan, July 20, 1971, 46/53,587

Int. Cl. C09k *3/28*

U.S. Cl. 260—897 A 5 Claims

Highly durable flame-retardant polyolefin compositions contain from 3 to 10% based on the weight of the polyolefin of at least one magnesium dibromopropyl phosphate of the formula:



wherein m and n are 1 or 2 and $m+n=3$.

3,780,143

O-(4-CHLOROBENZYL), S(PROPARGYL)ETHYL-PHOSPHONODITHIOATE

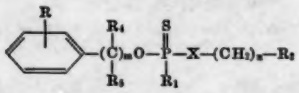
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,410

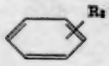
Int. Cl. A01n *9/36;* C07f *9/08, 9/16*

U.S. Cl. 260—956 1 Claim

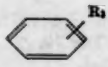
New compounds having the generic formula:



wherein R can be selected from the group consisting of hydrogen, nitro, halogen, alkoxy, alkyl and dioxyalkynyl; R_1 can be selected from alkyl and alkoxy; X can be sulfur or oxygen, n is zero or one and R_2 can be selected from hydrogen, thioalkyl, cyano, thioalkyl, thioalkylaryl, alkynyl, and a mono or multisubstituted group represented by



wherein R_3 can be selected from hydrogen, alkyl, thioalkyl, nitro, halogen, cyano and mixtures thereof; R_4 can be hydrogen or alkyl; R_5 can be hydrogen or alkyl; m is a whole number ranging between 1 and 4; provided that when n is zero then R_2 is



The compounds are useful as insecticides and miticides.

3,780,144

HALOGENATED ETHYLENICALLY UNSATURATED PHOSPHATES

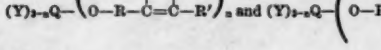
Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Continuation of abandoned application Ser. No. 785,335, Dec. 19, 1968. This application Sept. 10, 1971, Ser. No. 179,543

Int. Cl. A01n *9/36;* C07f *9/08;* C08f *45/58*

U.S. Cl. 260—956 13 Claims

This invention deals with new phosphorus-containing esters having the formulas



wherein

n is an integer having a value of 1 to 3,

Q is P or PO,

R is a divalent hydrocarbon having at least one and no more than 10 carbon atoms,

X is chlorine or bromine,

R′ is X or R″,

R″ is hydrogen or a monovalent hydrocarbon having at least one and no more than 20 carbon atoms, and

Y is X, OR″ or NR″$_2$.

These new esters are useful particularly as fire retardants, agricultural chemicals, fuel additives, plasticizers, monomers and intermediates for the synthesis or other useful derivatives.

3,780,145

TRIPHENYL PHOSPHATES

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,095

Int. Cl. C07f *9/12;* C10m *1/46*

U.S. Cl. 260—966 2 Claims

Triphenyl phosphates in which an average of at least one phenyl group per molecule is substituted with at least one alkyl group containing from 6–30 carbon atoms have been found to be excellent lubricants and functional fluids having much lower pour points and higher viscosity indices than conventional phosphate esters.

3,780,146

PROCESS FOR PREPARING DI-ISOPROPYL-PHOSPHONOMETHYL ACRYLATES OR METHACRYLATES

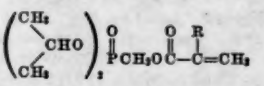
Peter Gohborn, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,192

Int. Cl. C07f *9/40*

U.S. Cl. 260—971 10 Claims

A process is described, for the preparation of compounds of the formula



wherein R is selected from the group consisting of hydrogen and lower alkyl, which comprises (1) reacting di-isopropyl phosphite with aqueous formaldehyde, in the

presence of a base, and thereafter (2) reacting the product of step (1) with an alkyl acrylate of the formula

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}COOR'$$

wherein R is as above described and R' is lower alkyl.

3,780,147

METHOD FOR MAKING HIGH FLOW POROUS REVERSE OSMOSIS MEMBRANES CONTAINING LIPIDS

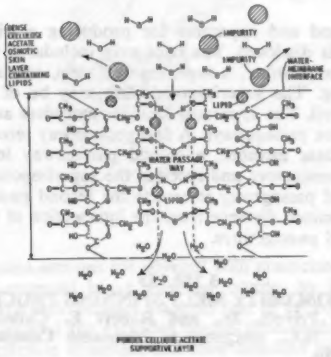
Regis R. Stana, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application May 13, 1969, Ser. No. 824,115, now Patent No. 3,593,855. Divided and this application Dec. 9, 1970, Ser. No. 96,311

The portion of the term of the patent subsequent to Feb. 29, 1989, has been disclaimed

Int. Cl. B29d *27/04*; C08b *17/36, 21/04*

U.S. Cl. 264—49 **9 Claims**



A semi-permeable membrane containing a supportive layer and a lipid containing osmotic skin layer of polymeric film forming cellulosic material is made by (1) admixing film forming cellulosic material, solvent, swelling additive and lipid to provide a casting solution (2) casting a film from the solution (3) drying the film (4) leaching the film to form a semi-permeable osmotic skin membrane containing a residue of lipid, and (5) optionally curing the membrane.

3,780,148

PROCESS FOR ENHANCING THE INHERENT VISCOSITY OF BISPHENOL POLYESTERS

Winston J. Jackson, Jr., Herbert F. Kuhfuss, and John R. Caldwell, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 11,902, Feb. 16, 1970, now Patent No. 3,684,766, dated Aug. 15, 1972, which is a continuation-in-part of abandoned application Ser. No. 817,137, Apr. 17, 1969. This application June 19, 1972, Ser. No. 263,810

The portion of the term of the patent subsequent to Aug. 15, 1989, has been disclaimed

Int. Cl. C08g *17/08*

U.S. Cl. 264—141 **4 Claims**

A bisphenol polyester with an inherent viscosity of at least about 0.5 is produced by the steps of (1) preparing a bisphenol polyester with an inherent viscosity of at least about 0.1, (2) comminuting the prepared polyester, (3) contacting the comminuted polyester with a crystallizing agent, and (4) heating the crystallized polyester in the presence of an inert gas or under reduced pressure to increase the inherent viscosity to at least 0.5. Preferably a copolyester of bisphenol A, terephthalic and isophthalic acid is used and the heating step is accomplished by fluidizing or polymerizing under reduced pressure the crystallized polymer in the same vessel as used for crystallization.

3,780,149

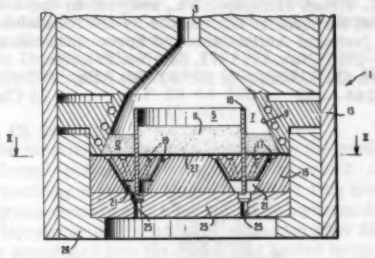
CONJUGATE SPINNING PROCESS

Herbert W. Keuchel, Long Valley, and Walter J. Polestak, Summit, N.J., assignors to Celanese Corporation

Filed Feb. 7, 1966, Ser. No. 525,680

Int. Cl. B29f *31/10*

U.S. Cl. 264—168 **3 Claims**



Crimped filaments are prepared by subjecting two streams of the same polymer to different temperature or shear forces and extruding the polymer as separate streams through the same spinnerette orifices.

3,780,150

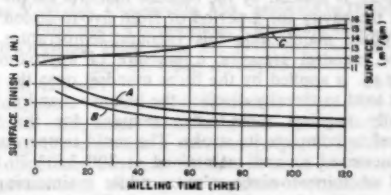
USE OF MENHADEN OIL TO DEFLOCCULATE DRY GROUND ALUMINA IN MANUFACTURE OF SUBSTRATES

Harold Wilbur Stetson, Newtown, Pa., and Warren Joseph Gyurk, Pluckemin, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Application May 6, 1970, Ser. No. 37,373, now Patent No. 3,698,923, which is a continuation of abandoned application Ser. No. 634,370, Apr. 27, 1967. Divided and this application Apr. 27, 1972, Ser. No. 248,238

Int. Cl. C04b *33/18, 35/10*

U.S. Cl. 264—63 **8 Claims**



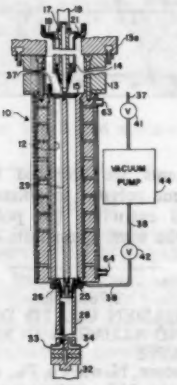
Dry ground alumina is ball milled with an azeotropic solvent mixture, a grain growth inhibitor, and periodic

additions of menhaden oil until the surface area of the alumina is increased to 12 to 15 m.²/gm. This material is then mixed with additional solvent, polyvinyl butyral and a plasticizer mixture to form a slip. The slip is de-aired and formed into a thin film on a moving support tape with doctor blade. After drying the film is removed and formed into substrates of the desired shape. The substrates are supported on a flat surface and covered with a flat body of sufficient weight to prevent warping during firing. The surface finish of the fired substrates is less than 3.5 in.

3,780,151
EVACUATED, DISPLACEMENT COMPRESSION MOLDING

Wilbur C. Heier, Hampton, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 11, 1971, Ser. No. 197,689
Int. Cl. B29c *25/00*; B29d *1/00*; B29g *1/00*
U.S. Cl. 264—102 **14 Claims**

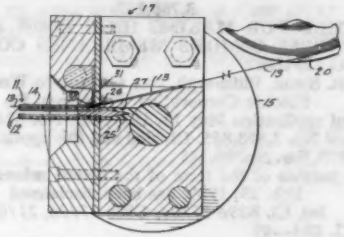


A process of molding long thin-wall tubular bodies from thermosetting plastic molding compounds wherein the tubular body lengths may be several times the diameters. The process is accomplished by loading a predetermined quantity of molding compound into a female mold cavity closed at one end by a force mandrel. After closing the other end of the female mold with a balance mandrel, the loaded cavity is evacuated by applying a vacuum of from one-to-five mm. pressure for a period of fifteen-to-thirty minutes. The mold temperature is raised to the minimum temperature at which the resin constituent of the compound will soften or plasticize and a pressure of 2500 p.s.i. is applied by the balance mandrel on the load within the cavity for a period of from five-to-fifteen minutes. While maintaining this vacuum, temperature, and balance mandrel pressure, a pressure of approximately 3500 p.s.i. is applied by the force mandrel onto the compound load to thereby displace the balance mandrel. This normally requires three-to-five minutes for the force mandrel to complete its stroke. The mold temperature is then increased to and maintained at 300–350° F. for a period of thirty-to-sixty minutes while maintaining the vacuum and pressure of both mandrels. The force mandrel is force-cooled to effect its thermal shrinkage for easy removal from the tubular article which is left in the female mold. The balance mandrel is then used to push the molded tubular article from the female mold. A mold insert may be attached to the female mold to permit molding of exterior spiral threads on one end of the molded article.

3,780,152
METHOD FOR PRODUCING TRIM STRIP ASSEMBLY

Charles E. Friesner, Pemberville, Ohio, assignor to Industrial Plastic Specialties Company, Chelsea, Mich.

Filed Mar. 23, 1971, Ser. No. 127,168
Int. Cl. B29f *3/00*
U.S. Cl. 264—174 **8 Claims**

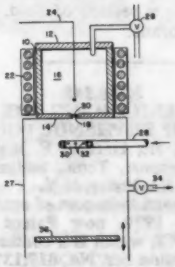


A method and apparatus for producing a trim strip assembly is disclosed. The trim strip includes a thermoplastic base member, a superimposed strip, and a plastic top coating. The superimposed strip may be of plastic, metal or foil. The apparatus includes extruders and a die having three passageways. A first passageway receives the extruded base member, a second passageway intersects the first passageway and receives the superimposed strip, and a third passageway intersects the second passageway a predetermined distance from the intersection of the first and second passageways.

3,780,153
LOW VISCOSITY MELT SPINNING PROCESS

Wilbur J. Privott, Jr., and Robert E. Cunningham, Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 599,539, Dec. 6, 1966. This application Oct. 2, 1969, Ser. No. 863,311
The portion of the term of the patent subsequent to Feb. 6, 1990, has been disclaimed
Int. Cl. B28b *3/20*
U.S. Cl. 264—176 F **12 Claims**



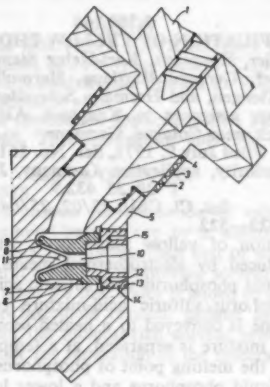
Continuous length fibers are formed from inorganic molten materials of low melt viscosity. The continuous fibers are obtained by extruding a free-falling stream, film-stabilizing the stream against the disruptive effects of surface tension pending solidification, and decelerating the solidified stream at a selected point intermediate of a first point (D_a) upstream of which an imposed stream decelerating force causes disruptions in the stream continuity and a second point (D_b) downstream of which the net tensional force acting upon stream results in substantially uniform finite length fibers.

3,780,154

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION AND/OR COVERING OF EXTRUDED SECTIONS

Karl Heinz Muller, Leverkusen, Klaus Richter, Cologne-Dellbruck, and Harry Rohr, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 15, 1971, Ser. No. 153,303
Claims priority, application Germany, June 20, 1970, P 20 30 578.6
Int. Cl. B28b *3/20*
U.S. Cl. 264—176 R 20 Claims



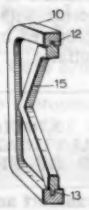
Extruded sections are covered with plasticised synthetic plastics material in an extruder nozzle, by having the plastic synthetic plastics material first of all flowing from outside around the extruder nozzle, then guided opposite to the ejection direction, and then deflected into the duct of the extruder nozzle.

3,780,155

METHOD OF ASSEMBLING A CHAIR BACK

William R. Byrd, 4007 Venice Drive 16506, and Richard W. Byrd, 2936 W. 15th St. 16505, both of Erie, Pa.

Continuation-in-part of abandoned application Ser. No. 772,152, Oct. 31, 1968. This application Mar. 3, 1971, Ser. No. 129,963
Int. Cl. B29c *27/20;* B29d *12/00*
U.S. Cl. 264—230 3 Claims



A process of making a chair including molding a frame having a groove, molding a splat having a tongue, allowing the splat to cool, placing the frame in a cold liquid, supporting the frame on a support frame so that it will not distort, stretching the frame over the splat so that the tongues on the splat enter the grooves on the frame and allowing the splat and frame to cool whereby the frame and splat shrink into a tight integral form. Glue may be placed in the groove.

3,780,156

PROCESS FOR MAKING FILLED METHYL METHACRYLATE ARTICLES

Donald D. Cameron, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,823
Int. Cl. B29c *3/00;* C08f *45/10*
U.S. Cl. 264—300 14 Claims

Disclosed herein is a process for making a highly filled polymethyl methacrylate article containing 50 to 80 percent by weight of particulate hydrate of alumina and 4 to 20 percent by weight of glass filaments.

3,780,157

PROCESS FOR THE PRODUCTION OF REINFORCED POLYAMIDE HOLLOW ARTICLES

Wilhelm Hechlhammer, Kurt Schneider, and Friedrich Fahnler, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,828
Claims priority, application Germany, Dec. 30, 1970, P 20 64 598.1
Int. Cl. B29c *5/04*
U.S. Cl. 264—310 7 Claims

The invention relates to a process for the production of reinforced polyamide hollow articles which comprises polymerizing a lactam having at least 5 ring members in the group consisting of a carbodiimide, cyanamide, mono-, polyisocyanate and a masked isocyanate after fibres have been introduced into the mould and heated to the required polymerization temperature in the mould which rotates during the polymerization about two intersecting axes.

3,780,158

PROCESS FOR RECOVERING HIGH PURITY FREE FLOWING CRYSTALLINE MANGANESE DIOXIDE FROM IMPURE MANGANESE NITRATE SOLUTIONS

Jay Y. Welsh, Catonsville, Md., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed June 23, 1972, Ser. No. 265,589
Int. Cl. C01g *45/02, 45/08*
U.S. Cl. 423—49 10 Claims

High purity, uniformly free flowing, pyrolusite crystals of manganese dioxide are obtained from crude impure manganese nitrate solution by adjusting the pH, heating and filtering the solution to remove precipitates. The treated solution is then combined with pure manganese dioxide to form a slurry which is vigorously agitated and heated at a rate of heat input controlled to decompose the manganese nitrate and provide high purity free flowing pyrolusite crystals of manganese dioxide, nitrogen dioxide and water vapor.

3,780,159

PROCESS FOR RECOVERING MANGANESE VALUES FROM LOW GRADE OXIDIZED MANGANESE CONTAINING ORES

Jay Y. Welsh, Catonsville, Md., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed June 23, 1972, Ser. No. 265,588
Int. Cl. C01g *45/02, 45/08*
U.S. Cl. 423—49 11 Claims

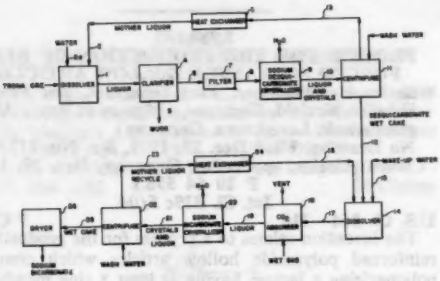
Manganese values are recovered from low grade oxidized manganese containing ore by contacting and leaching the ore with a solution prepared by dissolving and dispersing nitrogen dioxide in an aqueous medium and recovering an impure aqueous manganese nitrate solution. Impurities are removed from the nitrate solution by treatment with an alkaline agent and heat and the treated solution is heated to decomposition temperatures whereby substantially pure manganese dioxide, nitrogen dioxide and water vapor are formed. The nitrogen dioxide and water vapor formed by decomposition can be recycled to dissolve and disperse said materials in the aqueous medium.

3,780,160

CARBONATION PROCESS FOR THE MANUFACTURE OF SODIUM BICARBONATE

Richard W. Waggener, Green River, and James D. Taylor, Rock Springs, Wyo., assignors to Intermountain Research and Development Corporation, Green River, Wyo.

Filed Aug. 2, 1971, Ser. No. 168,306
Int. Cl. B01d *9/02*; C01d *7/10*
U.S. Cl. 423—186 3 Claims



Sodium bicarbonate is produced from trona by dissolving trona in an aqueous solvent, removing insolubles from the resulting solution, crystallizing sodium sesquicarbonate, dissolving the sodium sesquicarbonate crystals in an aqueous solvent, carbonating the sodium sesquicarbonate solution and crystallizing sodium bicarbonate from the carbonated solution.

3,780,161

PROCESS FOR CONCENTRATING SOLUTIONS

Yves Berquin, Paris, Pierre Duval, Grand Couronne, and Jean-Claude Alleton, Rouen, France, assignors to Azote et Produits Chimiques, Toulouse, France

Filed Feb. 2, 1971, Ser. No. 111,887
Claims priority, application France, Feb. 2, 1970, 7003465; June 26, 1970, 7023714
Int. Cl. C01b *15/16, 25/16, 25/26*
U.S. Cl. 423—310 11 Claims

To concentrate solutions such as phosphoric acid, droplets thereof are entrained in a high velocity ascending current of hot gas such as flue gas, air, etc., optionally containing a reactant gas such as ammonia. The entrained droplets are passed to a decelerating zone where the velocity profile of the gas is such that continuous circulation of droplets is possible, with droplets proximate the axis of said zone being entrained upwardly and droplets proximate the side of said zone falling downwardly where they can be re-entrained by entering hot gas. In this manner it is possible to recirculate the droplets and control the extent of concentration within a reasonably dimensioned apparatus and without any difficult separation problem because of excessively small droplets.

3,780,162

PREPARATION OF PHOSPHONITRILIC CHLORIDE

Charles R. Bergeron and James T. F. Kao, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed June 5, 1972, Ser. No. 259,669
Int. Cl. C01b *25/10*
U.S. Cl. 423—300 11 Claims

Process for the preparation of phosphonitrilic chloride from phosphorus pentachloride and ammonia in the presence of hydrogen chloride by carrying out the process under a pressure of hydrogen chloride ranging from 10 to about 40 p.s.i.g. The reaction product produced in good yield is a low molecular weight polymeric mixture primarily of cyclic trimer and tetramer.

3,780,163

PROCESS FOR REMOVING IRON CARBONYL WITH OZONE

Robert H. Callighan and John O. Hawthorne, Penn Hills Township, Allegheny County, Pa., assignors to United States Steel Corporation

No Drawing. Filed June 5, 1972, Ser. No. 259,983
Int. Cl. B01d *53/34*
U.S. Cl. 423—210 11 Claims

Liquids and gases containing iron carbonyl contaminants may have these carbonyls reduced by reaction with up to stoichiometric amounts of ozone to convert the carbonyls into ferrous carbonate.

3,780,164

PURIFICATION OF YELLOW PHOSPHORUS

Fritz Muller, Knapsack, Karl-Heinz Stendenbach, Ruhl-Pingsdorf, Gerhard Hartlapp, Hermulheim, Wilhelm Forst, Tiengen, and Hermann Schrodter, Hermulheim, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed July 9, 1971, Ser. No. 161,021
Claims priority, application Germany, July 17, 1970, P 20 35 432.9
Int. Cl. C01b *25/02, 25/04*
U.S. Cl. 423—322 5 Claims

Purification of yellow phosphorus, which may have been produced by electrothermal means, by intimately mixing liquid phosphorus with sulfuric acid.

A phosphorus/sulfuric acid-mixture coming from a stirring zone is conveyed to a heated separating zone, in which the mixture is separated, at a temperature at least as high as the melting point of phosphorus, into an upper layer of liquid phosphorus and a lower layer of sulfuric acid; the two layers are cooled down to a temperature lower than the melting point of phosphorus and the lower layer of sulfuric acid is discharged; the upper layer of solidified phosphorus is melted by supplying heat thereto and delivered to a wash zone, in which the phosphorus is water-washed and freed from adhering sulfuric acid.

3,780,165

SYNTHESIS OF CHLORINE FLUOROSULFATE AND BROMINE (I) FLUOROSULFATE

Carl J. Schack, Chatsworth, and Richard D. Wilson, Canoga Park, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,369
Int. Cl. C01b *17/45*
U.S. Cl. 423—466 4 Claims

This application discloses new processes for the preparation of chlorine fluorosulfate and bromine (I) fluorosulfate. Chlorine fluorosulfate is prepared by the reaction of chlorine monofluoride with sulfur trioxide. Bromine (I) fluorosulfate is prepared by the reaction of bromine with chlorine fluorosulfate.

3,780,166

PROCESS OF CATALYTICALLY REACTING SO_2 TO FORM SO_3 AND OF PRODUCING SULFURIC ACID

Herbert Drechsel, Frankfurt am Main, Karl-Heinz Dorr, Mainz (Rhine), and Hugo Grimm and Gustav Rowedder, Frankfurt am Main, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 8, 1969, Ser. No. 839,823
Claims priority, application Germany July 11, 1968, P 17 92 015.9
The portion of the term of the patent subsequent to Apr. 18, 1989, has been disclaimed
Int. Cl. C01b *17/76*
U.S. Cl. 423—522 8 Claims

A process of catalytically reacting SO_2-containing gas to form SO_3 in a catalytic plant including a plurality of

catalyst stages and in which SO_3 is condensed between catalyst stages forming sulfuric acid, characterized in that:

(a) the SO_3-containing gas leaving the first of two successive stages is transferred along a closed flow path into the second of said two stages;
(b) a partial stream is separated from said transferred stream and cooled, and SO_3 is condensed from the partial stream;
(c) said partial stream following said condensing is combined with the balance of said transferred stream and and the combined stream is introduced into the second catalyst stage.

3,780,167

PROCESS FOR SOLVENT EXTRACTION OF ORES

Henry H. Wheeler, Jr., Newport Beach, Calif., assignor to William M. Lansdale and Francis E. Wingate, fractional part interest to each

Continuation of abandoned application Ser. No. 738,930, June 21, 1968. This application July 30, 1971, Ser. No. 167,780
Int. Cl. C01b *17/08*
U.S. Cl. 423—578 12 Claims

A continuous process for extraction of valuable minerals from a mineral-bearing ore by a water-immiscible solvent which has a density less than that of water and in which the mineral is soluble. Following solvent extraction of the mineral from the ore, water is added to the ore-solvent mixture to flocculate residual gangue and separate the gangue from the mineral-rich solvent prior to treatment of the latter for separation of the mineral from the solvent.

3,780,168

PROCESS FOR THE REGENERATION OF ALUMINUM OXIDE

Gerhard Käbisch and Wolfgang Kunkel, Rheinfelden, Baden, Germany, assignors to Deutsche Gold- und Silber-Scheideansalt vormals Roessler, Frankfurt, Germany

No Drawing. Filed July 7, 1971, Ser. No. 160,510
Claims priority, application Germany, July 23, 1970, P 20 36 553.1
Int. Cl. C01b *15/02;* C01f *7/02*
U.S. Cl. 423—588 13 Claims

Aluminum oxide which has been inactivated in the anthraquinone process for the production of hydrogen peroxide is regenerated by treating with an alkaline acting solution.

3,780,169

MANUFACTURE OF BERYLLIUM HYDRIDE

David R. Carley, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Sept. 26, 1962, Ser. No. 227,632
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 18 Claims

The invention relates to a process for the preparation of beryllium hydride by reacting a diorganoberyllium compound with hydrogen under elevated temperature and pressure.

3,780,170

TASTELESS METHENAMINE MANDELATE

Frank W. Goebhart, Morristown, and James Ronald Draper, Dover, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed July 3, 1972, Ser. No. 268,371
Int. Cl. A01n *17/00;* A61k *9/00*
U.S. Cl. 424—35 5 Claims

A substantially tasteless methenamine mandelate suspension contains particles of methenamine mandelate enveloped in a coating of ethyl cellulose and at least one secondary coating ingredient including hydrogenated castor oil, paraffin, and/or a polyethylene glycol polymer or mixture of polyethylene glycol polymers. The coating is applied from a solvent solution, using conventional spray drying techniques. The coated methenamine mandelate particles are suspended in a vegetable oil vehicle to which a suspension stabilizer may be added. This suspension is stable, palatable and therapeutically active, upon oral administration, for the treatment of urinary infections. The addition of artificial sweeteners to mask the normally unpleasant taste of methenamine mandelate is not required. Flavor, coloring and relatively small amounts of sugar may be added to the suspension to provide specific taste qualities, if desired.

3,780,171

INGESTIBLE POLYMERIC COMPOSITIONS

Klaus Irmscher, Michael Klockow, Werner Mehrhof, Klaus Pfitzner, Dieter Randaj, Herbert Nowak, and Karl-Otto Freisberg, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Dec. 15, 1970, Ser. No. 98,441
Claims priority, application Germany, Dec. 27, 1969, P 19 65 133.3; Oct. 10, 1970, P 20 49 938.1
Int. Cl. A61k *27/00*
U.S. Cl. 424—79 4 Claims

Ingestion of effective amounts of a polymeric composition comprising at least one synthetic, non-toxic, water insoluble granular cross-linked polymer which is inert to digestive enzymes and contains ionizable amino groups, and has a macroporous structure, a swelling volume of less than 5 ml./g. in water and a maximum grain size of 0.5 mm. and which exhibits, after equilibration with air of 100% relative humidity at 25° C., a moisture content of less than 50% by weight, produces a lowering of cholesterol and triglyceride blood levels. The polymeric compositions exhibit lipid-binding and bile-acid binding effects and lipase inhibition.

3,780,172

ANTIBIOTIC NO. 1308 AND PROCESS FOR PRODUCING THE SAME

Isao Takeda, Tokyo, Masayuki Mizuno, Saitama, Toshiaki Sugawara and Yukiji Shimojima, Tokyo, and Sadayuki Horiguchi, Kanagawa, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1971, Ser. No. 190,477
Claims priority, application Japan, Nov. 17, 1970, 45/100,705
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 2 Claims

New antibiotic No. 1308 useful for controlling the growth of molds, particularly rice blast molds, having the elementary analysis values of C, 67.62%, H, 9.67% and the balance O, a melting point from 128° to 132° C., a molecular weight of 770, optical rotation of $[\alpha]_D^{18}$ —50.5 (c.=2 in methanol), and the infrared and ultraviolet absorption spectra shown in the accompanying FIGS. 1 and 2.

The antibiotic is obtained by culturing Streptomyces 1308 (NRRL 5318) in a medium containing a carbon source, a nitrogen source and inorganic salts, and recovering the resulting active substance from both mycelium and culture filtrate.

3,780,173

PARTRICIN METHYL ESTER

Tiberio Bruzzese, 7 Via Monte Cervino 20149, and Rodolfo Ferrari, 8 Via Biella 20143, both of Milan, Italy

Filed Nov. 1, 1971, Ser. No. 194,692
Claims priority, application Great Britain, Nov. 3, 1970, 52,271/70
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 1 Claim

Methyl partricin, a new polyenic antibiotic agent is described herein. This material is obtained by the reaction

of partricin with diazomethane. It possesses good antifungal activity with low toxicity.

3,780,174

ANTIBIOTIC A477 AND PROCESS FOR PREPARATION THEREOF

Robert L. Hamill, New Ross, Michael E. Haney, Jr., West Lafayette, and William Max Stark, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 27, 1971, Ser. No. 192,838
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 **3 Claims**

The basic, nitrogenous antibiotic A477 produced by culturing Actinoplanes sp. NRRL 3884 under submerged aerobic fermentation conditions forms crystalline salts with mineral and organic acids which as the free base or as such salts inhibits the growth of microorganisms. A477 and salts thereof are particularly useful in controlling the growth of cariogenic organisms and additionally are useful in promoting the growth of chickens.

3,780,175

SILYLMETHYL THIOPSEUDOUREA SALTS

Sandor Barcza, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,819, now Patent No. 3,637,735, dated Jan. 25, 1972. Divided and this application July 9, 1971, Ser. No. 161,272
Int. Cl. A61k *27/00*
U.S. Cl. 424—184 **7 Claims**

The compounds are tri-substituted silylmethyl thiopseudourea salts, e.g., 1,3 - dimethyl - 2-trimethylsilylmethylthiopseudourea hydrochloride, and are useful as pharmaceuticals. Said compounds are obtainable by reacting a suitable trisubstituted halomethylsilane with a thiourea.

3,780,176

PREDOMINANTLY AQUEOUS SUBSTITUTED TRIAMCINOLONE COMPOSITIONS

Fu-Dah Young, River Edge, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 5, 1971, Ser. No. 186,789
Int. Cl. A61k *17/00*
U.S. Cl. 424—239 **7 Claims**

Aqueous solutions and gels of triamcinolone type steroids, in particular triamcinolone acetonide, are disclosed which are suitable for eye-ear treatment or as topical preparations in gel form.

3,780,177

17-BUTYRATE, 21 - ESTER DERIVATIVES OF 6α,9α-DIFLUOROPREDNISOLONE, COMPOSITIONS AND USE

Alberto Ercoli, Milan, and Rinaldo Gardi, Carate Brianza, Milan, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Application June 30, 1970, Ser. No. 51,378, which is a continuation-in-part of applications Ser. No. 735,509 and Ser. No. 735,537, both June 10, 1968, all now abandoned. Divided and this application Nov. 10, 1971, Ser. No. 197,476
Claims priority, application Italy, June 6, 1967, 17,274/67, 17,277/67
Int. Cl. A61k *17/00*; **C07c** *167/00*
U.S. Cl. 424—243 **14 Claims**

There have been prepared the new 17-butyrates, 21-esters of 6α,9α-difluoroprednisolone useful as anti-inflammatory agents. They may be mixed with suitable pharmaceutical carriers to obtain pharmaceutical compositions for the systemic and local treatment of inflammatory conditions and diseases.

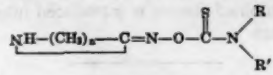
3,780,178

FUNGICIDAL COMPOSITIONS AND METHODS OF KILLING FUNGI USING ALKYLENIMINE-2-OXIMES

Marvin Theodore Tetenbaum, Convent, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 14, 1971, Ser. No. 207,959
Int. Cl. A01n *9/12, 9/22*
U.S. Cl. 424—244 **3 Claims**

Alkylenimine-2-oximes having the general formula:



wherein *n* is 2 to 10 and R and R′ are selected from the group consisting of hydrogen, alkenyl, alkyl, cycloalkyl, aryl, and substituted aryl, are effective on controlling soil nematodes and plant diseases caused by microorganisms such as plant pathogenic fungi.

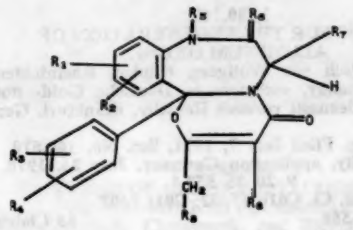
3,780,179

ANIMAL FEED FOR OBTAINING INCREASED PRODUCTION IN ANIMALS

Robert J. Collins, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,327
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **6 Claims**

An animal feed comprising a compound of the group consisting of an oxazinobenzodiazepine of the formula:



Formula 1

wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen, alkyl and alkoxy of 1 to 6 carbon atoms, inclusive, halogen, $-CF_3$, $-NO_2$ and $-CN$; wherein R_5 is selected from the group consisting of hydrogen, alkyl defined as above, and benzyl; wherein R_6 is selected from the group consisting of $=O$ and $=S$; wherein R_7 is selected from the group consisting of hydrogen, alkyl defined as above, and alkoxy defined as above; and wherein R_8 is selected from the group consisting of hydrogen, alkyl defined as above, and phenyl in combination with the nutrient feed.

3,780,180

N-SUBSTITUTED AMINO-N-NITROSO-AMINOACETONITRILES IN THE TREATMENT OF HYPERTENSION

Paul L. Anderson, Dover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 41,056, May 27, 1970. This application Feb. 4, 1971, Ser. No. 326,405
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **4 Claims**

Certain known N-substituted amino-N-nitroso-aminoacetonitrile, e.g., N - morpholino-N-nitroso-aminoacetonitrile, have been found to be useful as hypotensive/antihypertensive agents.

3,780,181

PREPARATION OF ACTIVE DRY YEAST

William E. Trevelyan, Epsom Downs, England, assignor to The Distillers Company (Yeast) Limited, Morden, Surrey, England

Continuation-in-part of application Ser. No. 78,304, Oct. 5, 1970, which is a continuation-in-part of application Ser. No. 699,781, Jan. 23, 1968, both now abandoned. This application Sept. 5, 1972, Ser. No. 286,133
Claims priority, application Great Britain, Feb. 18, 1967, 7,861/67
Int. Cl. A23j *1/18*; C12c *11/32*
U.S. Cl. 426—18 11 Claims

Active dry yeast is prepared by continuously feeding crumbly yeast into a mill containing a high speed rotor wherein the yeast is disintegrated to a particle size less than 1.7 mm. predominantly by air turbulence without substantial breakdown of the yeast cells. Thereafter, the disintegrated yeast is dried to a dry matter content of at least 92%.

3,780,182

METHOD FOR IMPARTING CHEESE-LIKE FLAVOR TO PROTEINACEOUS MATERIALS

John D. Johnson, Evanston, and Dean L. Southworth, Glenview, Ill., assignors to Krafteo Corporation, New York, N.Y.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,530
Int. Cl. A23c *19/12*; A23l *1/26*
U.S. Cl. 426—33 11 Claims

Method for imparting an enhanced cheese-like flavor to proteinaceous materials. A cheese protein source and a fat source are mixed together to provide a substrate. The fat source is a triglyceride fat having at least about 3 percent by weight of the fat of C_{10} or lower saturated fatty acid moieties. The substrate is then subjected to elevated temperature conditions and is thereafter inoculated with an esterase. The inoculated substrate is fermented to split off and free at least part of the C_{10} and lower fatty acid moieties. The fermented substrate is then combined with a proteinaceous material and is dried to provide a powdered product with an enhanced cheese-like flavor.

3,780,183

PLANT PROTEIN PRODUCT AND PROCESS

George Wheeler Edwards and Arrie Wood Edwards, both of Rte. 4, Kay Drive, Jackson, Tenn. 38301

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,714
Int. Cl. A23k *1/00*
U.S. Cl. 426—50 15 Claims

Alfalfa and clover, containing natural protein, is treated with an aqueous basic solution, the resulting extract is digested at a pH of about 6 to 14 with pancreatin and the undissolved material is separated from the aqueous digested extract to form an edible product.

3,780,184

FLAVORED OILS AND FOOD PRODUCTS CONTAINING THE SAME

James J. Broderick, River Edge, N.J., and Seymour A. Marcus, Brooklyn, N.Y., assignors to H. Kohnstamm Company, Inc., New York, N.Y.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,457
Int. Cl. A23l *1/26*
U.S. Cl. 426—65 12 Claims

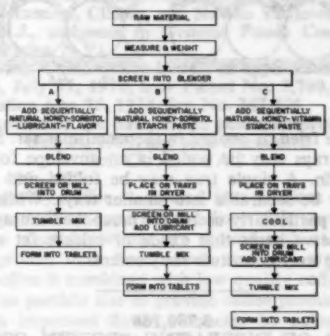
A method for the preparation of an edible oleophilic flavor composition which comprises reacting at a temperature of from about 175° F. to 450° F., a reaction mixture consisting of (1) an amino reactant selected from the group consisting of a sulfur-containing polypeptide, cysteine, cystine or salts thereof, (2) a ribonucleotide and (3) an edible oil, and recovering the flavor base reaction product derived therefrom.

3,780,185

COMPOSITION OF MATTER INCLUDING DRIED HONEY

Murray E. Fields, Phoenix, Ariz., assignor to Honey Tein Products, Inc., Phoenix, Ariz.

Filed Sept. 30, 1970, Ser. No. 76,755
Int. Cl. A23l *1/08, 1/26*
U.S. Cl. 426—72 14 Claims



A non-sticky product embodying honey is prepared by admixing, blending and screening soy protein isolate, non-fat dried milk, sugar and dried honey. Sorbitol and natural honey are then added and the resultant mixture is blended, screened and tumble mixed. The product may be formed into tablets or wafers.

3,780,186

ALL-CORN ALIMENTARY PASTE FOODSTUFF

William A. Troy, Park Forest, Ill., assignor to Swift & Company, Chicago, Ill.

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,616
Int. Cl. A23l *1/16*
U.S. Cl. 426—93 12 Claims

A process for producing an alimentary corn paste foodstuff suitable for making extrusion or macaroni type products comprising a mixture of substantially equal amounts of regular nongelatinized corn flour and pregelatinized corn flour plus a minor amount of an edible oil or fat as a lubricant, salt, and optional ingredients which mixture may be processed to produce items similar to paste like products made traditionally from certain wheat flours. The corn products thus produced may be cooked, partially cooked, or uncooked.

3,780,187

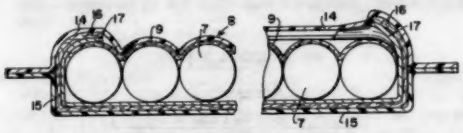
HEAT-AND-SERVE PACKAGES FOR PRECOOKED SAUSAGE AND THE LIKE

John C. Bard and Russell H. Maas, Madison, Wis., assignors to Mayer, Oscar & Company, Inc., Madison, Wis.

Continuation-in-part of application Ser. No. 775,000, Nov. 12, 1968, now Patent No. 3,619,215. This application July 19, 1971, Ser. No. 163,667
The portion of the term of the patent subsequent to Nov. 9, 1988, has been disclaimed
Int. Cl. B65b *25/06*
U.S. Cl. 426—113 11 Claims

Heat-and-serve packages of precooked sausage and the like include a disposable, heatable tray formed with foldable sides from sheet material capable of retaining melted fat, with links or patties of precooked or prefried sausage or the like laid flatwise on the bottom of the tray. The sides of the tray are folded downwardly and inwardly

over the margins of the precooked sausage links or patties and the assembly is enclosed in a disposable film envelope, being preferably evacuated and hermetically sealed. In use, the outer film or envelope is removed, the sides of the tray are folded up and the tray is inserted in an oven, or placed on a hot plate whereby the sausage contents are heated and acquire the characteristic flavor



of sausage fried or cooked in the usual manner. Single or multiple trays may be sealed in an envelope formed of barrier film. A single tray may be folded and multiple trays may be separable into smaller trays. While the invention is particularly useful for precooked sausage, other heat-and-serve items that exude or release fat or liquid on heating may constitute the contents.

3,780,188

METHOD OF INCREASING PROTEIN CONTENT OF WHEAT FLOUR BASED BAKED AND FRIED PRODUCTS AND COMPOSITIONS FOR PREPARING SAME

Cho C. Tsen and William J. Hoover, Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,239
Int. Cl. A21d *2/16, 2/26, 13/06*
U.S. Cl. 426—152 **16 Claims**

A protein fortified composition for preparing wheat flour based bread, baked goods and fried dough products, and a method of incorporating protein supplements into bread or other baked or fried product doughs containing wheat flour without adversely affecting the product volume, texture, shelf life, crumb grain or organoleptic properties of the bread, or baked or fried product produced therefrom, by adding to the dough ingredients from 0.1% to 3% of either the sodium or calcium salts of an acyl lactylate of C_{14}–C_{22} fatty acids, or ethoxylated mono- and diglycerides of C_{14}–C_{18} fatty acids (polyoxyethylene (20) mono- and diglycerides of the fatty acids) along with the protein supplement. The protein additives may for example be selected from the group consisting of soy flour, soy isolates, nonfat milk solids, whey products, fish protein concentrate, cottonseed, flour, chick pea flour, sesame seed flour, corn-soy-milk blend flour, wheat protein concentrate, wheat gluten, defatted wheat germ, Torula yeast, wheat-soy blend flour, edible single cell proteins, and mixtures thereof. Generally the quantity of protein supplement added does not significantly exceed that required to furnish a quantity of protein essentially equal to that provided by the wheat flour in the dough.

3,780,189

SWEETENING COMPOSITIONS AND METHOD FOR USE THEREOF

Don Scott, Skokie, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 823,482, May 9, 1969. This application Sept. 13, 1971, Ser. No. 180,061
Int. Cl. A23l *1/26*
U.S. Cl. 426—212 **19 Claims**

Novel compositions containing a sweet dipeptide and known sweetening agents possess enhanced sweetening potency and are useful for the sweetening of edible materials.

3,780,190

ARTIFICIAL SWEETENING COMPOSITION

Paul Kracauer, New York, N.Y., assignor to American Sweetener Corp., New York, N.Y.

No Drawing. Filed May 3, 1971, Ser. No. 139,838
Int. Cl. A23l *1/26*
U.S. Cl. 426—213 **4 Claims**

An essentially non-caloric artificial sweetening composition comprises a minor amount of a soluble saccharin compound and a major amount of a soluble citrate as an extender and de-bittering agent. The flavor of the composition may be further enhanced by the addition of small amounts of d-galactose, acidic buffering agents and alkaline chlorides.

3,780,191

PROCESS FOR REDUCING THE FAT CONTENT OF MEATS

Herbert R. Langer, 94 Carroll St., Manchester, N.H. 03102, and Arthur W. Langer, Jr., 175 Oakwood Road, Watchung, N.J. 07060

No Drawing. Filed Oct. 22, 1971, Ser. No. 191,772
Int. Cl. A22c *18/00*
U.S. Cl. 426—231 **19 Claims**

The fat content of fat-containing meat is reduced by comminuting a frozen portion of the meat, thereby obtaining substantially discrete frozen meat particles and substantially discrete frozen fat particles. The particles are then mechanically separated into a substantially meat particle phase and a substantially fat particle phase.

3,780,192

CURING OF MEATS

Wilson E. Danner, Linden, Paul A. Hammes, Westfield, and Charles W. Everson, Warren, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of applications Ser. No. 98,484, Dec. 15, 1970, and Ser. No. 314,896, Dec. 13, 1972, both now abandoned. This application Mar. 27, 1973, Ser. No. 345,429
Int. Cl. A23b *1/02*; A23l *3/34*
U.S. Cl. 426—266 **4 Claims**

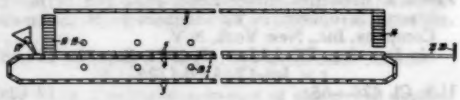
The curing of meats with a nitric oxide curing medium and an enediol or a diketone reducing agent in the presence of iron or an iron salt accelerates the curing and affords a meat product of improved color and color stability.

3,780,193

PRODUCTION OF WAFFLES AND LIKE FOOD PRODUCTS

David Charles De Jersey, East Bentleigh, Victoria, Australia, assignor to C. L. De Jersey & Sons Proprietary Limited, Moorabbien, Victoria, Australia

Continuation of abandoned application Ser. No. 476,582, Aug. 2, 1965. This application Apr. 24, 1970, Ser. No. 29,745
Claims priority, application Australia, Aug. 3, 1964, 47,680/64; Aug. 6, 1964, 47,819/64
Int. Cl. A21d *13/08*
U.S. Cl. 426—505 **12 Claims**



A method and apparatus for the continuous production of waffles and like products in the form of a continuous moving strip for severing into individual waffle units, in which dough mixture is fed to the trailing end of an endless moving succession of upper and lower co-acting molding and cooking plates between which the continuous strip

of waffles is molded and cooked, wherein the trailing end of the strip is progressively formed by a directly-downward moving of the upper trailing plate of said endless succession of plates co-acting with the registering lower plate and by said co-acting trailing plates being maintained pressed together during the period of initial molding and cooking of the dough mixture.

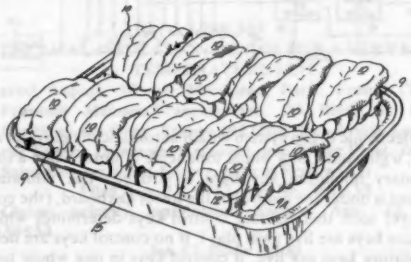
3,780,194
α,β-UNSATURATED ALDOXIME SWEETENERS
Edward M. Acton, Menlo Park, Morris A. Leaffer, Palo Alto, and Herbert Stone, Menlo Park, Calif., assignors to Sanford Research Institute, Menlo Park, Calif.
No Drawing. Filed Nov. 15, 1971, Ser. No. 198,939
Int. Cl. A23l *1/26*
U.S. Cl. 426—342 **2 Claims**

The oximes 1-cyclopentene - 1 - carboxyaldehyde syn-oxime, 1-cyclohexene-1-carboxaldehyde syn-oxime, and tiglaldehyde syn-oxime are found to have utility as artificial sweeteners owing to their sweet taste properties and good water solubilities. These oximes have potential application in low-calorie foods and beverages, particularly when used in combination with sucrose.

3,780,195
ENCAPSULATION PROCESS
Leslie L. Balassa, Blooming Grove, N.Y., assignor to Balchem Corporation, State Hill, N.Y.
No Drawing. Filed Oct. 22, 1969, Ser. No. 868,637
Int. Cl. A23l *1/26*; B01j *13/02*; B44d *1/02*
U.S. Cl. 426—350 **10 Claims**

A process for encapsulating an active material in a shell composition in which the capsule composition is formed by dispersing an active material and a shell composition in a solvent for the shell composition. Capsules are prepared by forming the capsule composition into particles containing the active material as a dispersed phase in a solution of the shell composition and removing the solvent from the shell composition solution. A lower molecular weight polyglycol is employed to desolventize the shell composition. Removal of solvent is conducted without extracting a substantial proportion of active material from the capsules. If desired, the desolventizing operation can be accelerated by first dispersing the capsule composition in a viscous white mineral oil in which the capsule composition forms discrete particles, and then admixing the resulting mixture with an anhydrous polyglycol containing a sufficient quantity of mutual solvent to render the mineral oil and polyglycol at least partially compatible.

3,780,196
METHOD OF PACKING SHRIMP
Edward H. Domecki, 2140 NE. 30th St., Lighthouse Point, Fla. 33064
Filed Feb. 29, 1972, Ser. No. 230,385
Int. Cl. A22c *29/00*; B65b *25/22*
U.S. Cl. 426—393 **6 Claims**

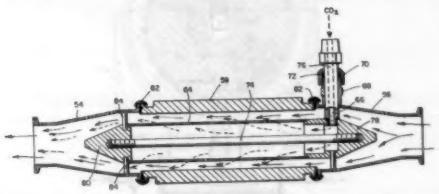


The shrimp is decapitated and the shell covering its body is severed longitudinally along its dorsal side with the cut extending through the first five segments and partially through the sixth segment, leaving the telson intact. The meat of the shrimp is then lifted from the shell but is left attached to the end portions of the sixth segment and the telson. The vein and roe are completely removed and the meat is placed on top of the shell. It is packed in an aluminum tray with the meat resting on the shell, wrapped and then frozen.

3,780,197
BALANCED COFFEE FLAVORS
Arthur Stefanucci, Clifton, and Slawko Yadlowsky, Manville, N.J., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 58,689, July 27, 1970, now Patent No. 3,700,462. This application Apr. 25, 1972, Ser. No. 247,496
The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed
Int. Cl. A23f *1/02*
U.S. Cl. 426—473 **26 Claims**

High quality coffee is divided into portions and each portion roasted to a separate and discernible average roast color, the roasted portions are ground with at least one portion ground to a fine particle size; the ground high quality coffee is combined with low quality coffee ground to a coarse particle size to provide coffee products having either an improved flavor character by enhancing the flavor of the high quality coffee and/or by masking the undesirable flavor character of the low quality coffee, or to provide lower cost products.

3,780,198
SYSTEM FOR CARBONATING BEVERAGES
Leo F. Pahl, Pasadena, and Norman H. Jones, Baltimore, Md., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.
Filed June 7, 1971, Ser. No. 150,379
Int. Cl. A23l *1/00*
U.S. Cl. 426—477 **22 Claims**



In-line carbonation of beverages in a system comprising a blender, a cooler and a filler. A carbon dioxide diffusion-type injector located in the line between the blender and filler diffuses carbon dioxide into the blended beverage while the beverage flows through the injector at a substantially uniform flow rate. The injector comprises a microporous tubular member.

3,780,199
MANUFACTURE OF RICOTTA CHEESE
Donald R. Carswell, Lake Bluff, Ill., assignor to Kraftco Corporation, New York, N.Y.
Filed Dec. 28, 1970, Ser. No. 101,611
Int. Cl. A23c *19/02*
U.S. Cl. 426—495 **4 Claims**

An improved method for manufacture of Ricotta cheese is provided. In the method, Ricotta cheese curd and whey are pumped to a whey drainage screen having a particular mesh size. After whey has been drained from the curd, the curd is pumped against a predetermined back pressure to a holding tank. Thereafter, the curd is packaged into suitable containers while it is hot.

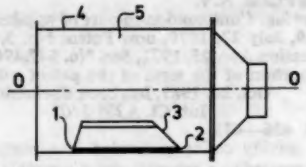
ELECTRICAL

3,780,200

HEATING APPARATUS FOR PLASTIC EXTRUDERS

Karel Maurer, Hradec Kralove, and Ladislav Benda, Plotiste Nad Labem, both of Czechoslovakia, assignors to Tesla, Narodni podnik, Praha, Czechoslovakia

Filed Nov. 18, 1971, Ser. No. 199,861
Int. Cl. F27d *11/04*
U.S. Cl. 13—23 **13 Claims**



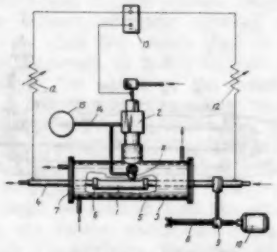
A heating unit comprising a chamber in which are located at least two electrodes. The electrodes each comprising a first portion matching and secured to the interior wall of the chamber and a second portion extending radially inward toward the central axis.

3,780,201

PLASMA KILN

Vladimir Dembovsky, Ostrava, Czechoslovakia, assignor to Vysoka Skola Banska Ostrava

Filed Feb. 6, 1973, Ser. No. 330,025
Int. Cl. H05b *7/00*
U.S. Cl. 13—31 **4 Claims**



A plasma kiln with a horizontal cristallizer moved within reach of a plasma torch, provided with parallel supply conductors of electric current to both ends of the cristallizer and with observation means of the cristallizer connected to the supply of the working gas of the plasma torch.

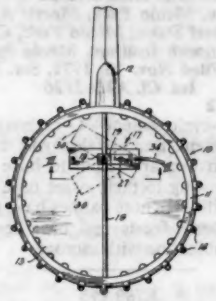
3,780,202

MOUNTING BRACKET FOR PICKUP IN A STRINGED MUSICAL INSTRUMENT

Clement R. Law, Chicago, Ill., assignor to Clement R. Law and Joseph F. Law, Chicago, Ill.

Filed June 19, 1972, Ser. No. 263,860
Int. Cl. G10h *1/00, 3/00*
U.S. Cl. 84—1.04 **3 Claims**

A mounting bracket for mounting a pickup head for an amplifier within a banjo or other stringed instrument, the bracket being arranged to be adjustably positionable along a pair of spaced rods which extend in parallel relation across the frame of the instrument beneath the head thereof, with a support engaging the rods and being adjustably positionable therealong. A plate is carried by the support and is pivotally supported from the support. A pickup is secured to the plate and is positionable in the vicinity of the head in widely adjustable relationship with the head.

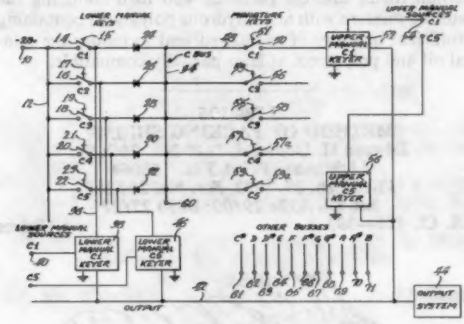


3,780,203

ORGAN SYSTEM FOR AUTOMATICALLY PRODUCING RUNS OF VARIOUS CHARACTER

Adelore F. Petrie, Arlington Heights, Ill., assignor to Hammond Corporation, Deerfield, Ill.

Filed Jan. 16, 1973, Ser. No. 324,238
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.17 **5 Claims**



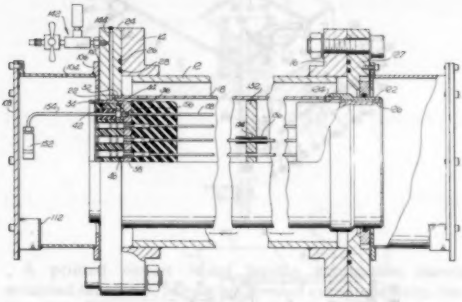
An electronic organ system which automatically plays an arpeggio, a glissando, or a whole tone scale of notes when a supplementary miniature keyboard is stroked. The miniature keyboard is under the control of the lower keyboard, (the control keys) such that holding control keys determines which miniature keys are live (will play). If no control keys are held, all miniature keys are live. If control keys in one whole tone scale only are held, all miniature keys in the same whole tone scale are live. Others are dead. If control keys in both whole tone scales are held, only the same keys and those in octave relation thereto in the miniature keyboard are live.

3,780,204

ELECTRICAL PENETRATION ASSEMBLY

Leland W. Oliver, Phoenix; Francis H. Ingham, Scottsdale, and Edward G. Dubell, Phoenix, all of Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 25, 1972, Ser. No. 256,807
Int. Cl. H01b 17/26
U.S. Cl. 174—11 R 9 Claims



An electrical penetration assembly for installation in a containment wall formed of a nozzle extending through the wall and terminating in flanges at each end thereof. A canister assembly formed of a pipe member is positioned within the nozzle and extends through the containment wall. A glass-sealed hermetic header is positioned in the pipe member at the first end thereof and is secured to the pipe member at one end. A plurality of electrical conductors, terminating in electrical contacts, extend through the header and are sealed thereto, each of the conductors extending through the header to the other end of the pipe member. Means are provided for supporting the conductors in the pipe member. Electrical contact terminals terminate the electrical conductors at the other end of the header. In addition, means are provided for securing the electrical contact terminal means to the other end of the pipe member. The securing means at the other end of the pipe member may comprise a second glass-sealed hermetic header. Electrical connection to the electrical contact in the header is made by individual electrical contacts. The first end of the pipe member is positioned at the external side of the containment wall, and a flange member is secured to the pipe end and adapted to be fastened to one of the nozzle flanges. In addition, a channel is formed in the flange member, the channel providing means for pressurizing the interior of the pipe member. Means are provided for determining leakage in the assembly. A terminal housing is secured to the flange member, the terminal housing providing environmental and mechanical protection for the terminal area.

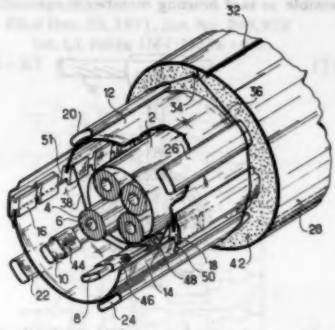
3,780,205

THERMAL INSULATION DEVICE FOR A VERY LOW-TEMPERATURE LINE

Marcel Aupoix, 10 rue Maublanc, Paris, France (75015); Francois Muisson-Franckhauser, 94 Blvd. de France, Brettigny-sur-Orge, France (91220); Jean-Marie Leroux, 5 rue Eugene Delacroix, Grenoble, and Roger Prost, Domaine Saint-Hugues, Saint-Egreve, both of France (38)

Filed Aug. 23, 1972, Ser. No. 283,133
Claims priority, application France, Aug. 23, 1971, 7130534
Int. Cl. H01v 11/00
U.S. Cl. 174—15 C 8 Claims

Thermal insulation device for a very low-temperature line comprising a thermal screen around the line, a pulverulent insulating material and an outer casing surrounding the whole device. The thermal screen consists of two half-shells made of an invariable alloy and assembled longitudinally by means of thermally and electrically insulating spacers so as to enable the degassing of the pulverulent insulating material from the inside of the screen.

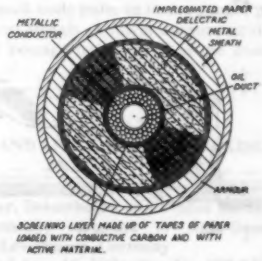


3,780,206

ELECTRIC CABLES

Edward Henry Reynolds, London, England, assignor to British Insulated Callender's Cables Limited, London, England

Division of Ser. No. 20,670, March 18, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,553
Int. Cl. H01b 9/02, 3/48
U.S. Cl. 174—36 3 Claims


METALLIC CONDUCTOR
IMPREGNATED PAPER DIELECTRIC
METAL SHEATH
OIL DUCT
ARMOUR
SCREENING LAYER MADE UP OF TAPES OF PAPER LOADED WITH CONDUCTIVE CARBON AND WITH ACTIVE MATERIAL

A conductive or semiconductive fibrous sheet material used as an electric screen in contact with the dielectric fluid of high voltage cables having a fluid impregnated dielectric is loaded both with conductive carbon and with at least one active, finely divided material selected from the group consisting of aluminium oxide and such other metallic oxides, hydrated metal oxides, metal hydroxides, metal carbonates and basic metal carbonates as have adsorptive powers comparable with that of active finely divided aluminum oxide. The dielectric is free of any adsorbent.

3,780,207

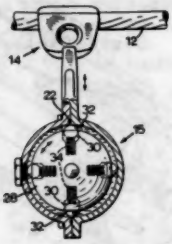
VIBRATION DAMPER

Noble Wellington Crosby, Trenton, and Robert Clinton Walker, Newmarket, Ontario, both of Canada, assignors to Lacal Industries Limited, Newmarket, Ontario, Canada

Continuation-in-part of Ser. No. 163,882, July 19, 1971. This application July 5, 1972, Ser. No. 269,188
Int. Cl. H02g 7/14
U.S. Cl. 174—42 12 Claims

This invention concerns a vibration damper for a suspended cable comprising a housing, means for clamping said housing to a suspended cable, said housing having a sealed chamber, an inertia member in said sealed chamber, resilient means in said sealed chamber compressible in the spacing between said

sealed chamber wall and said inertia member and maintaining said inertia member spaced from the wall of said sealed chamber under static conditions, said resilient means being compressible as said housing member moves with respect to



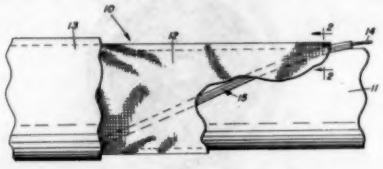
said inertia member under conditions of vibration of said housing, a viscous damping fluid in said sealed chamber, said viscous damping fluid having a viscosity to dampen vibration as it is displaced in said chamber by said inertia member under conditions of vibration.

3,780,208

COMPOSITE HOSE HAVING A GROUNDING WIRE ENCLOSED IN A SLEEVE AND WRAPPED ABOUT THE CORE TUBE OF THE HOSE

Dewey E. Whittaker, Ravenna, and Charles D. Jenks, Kent, both of Ohio, assignors to Samuel Moore & Company, Mantua, Ohio

Filed June 5, 1972, Ser. No. 259,661
Int. Cl. F16l *11/12*
U.S. Cl. 174—47 **12 Claims**



A composite hose adapted for conveying pressurized pulsating fluids is provided with a grounding wire secured to a protective sleeve helically wound about the core tube of the hose and adapted to slip as a unit relative to the core tube and surrounding fibrous reinforcing sheath as the hose expands radially in response to pulsating pressure.

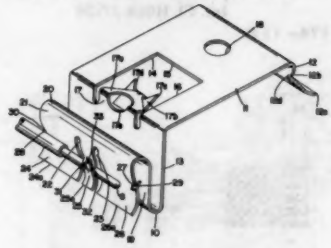
3,780,209

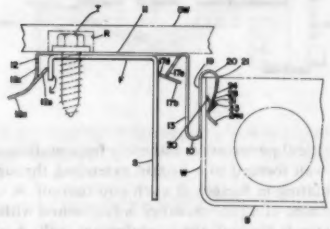
CLIP FOR SECURING CONDUIT BOXES TO METAL DRY WALL STUDS

Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio

Filed Sept. 27, 1972, Ser. No. 292,813
Int. Cl. H02g *3/08*; F16b *2/24*
U.S. Cl. 174—51 **17 Claims**

A one-piece clip is provided which can be quickly and easily secured to the flange of a channel stud and to a conduit box without the aid of fastening means other than that which is an integral part of the clip. The clip is provided with barbs or prongs which engage the web and flange lip of the stud for preventing displacement of the clip relatively to the stud and box. A feature of the invention is the provision of means formed integrally with the clip for the securement to the clip





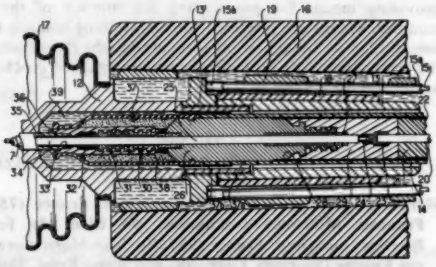
of the ground wire of a three wire system, as well as means in the clip for receiving a screwdriver or the like for the purpose of biasing portions of the clip away from other portions, whereby to facilitate attachment of the clip to the stud and box.

3,780,210

CONNECTION DEVICE FOR SUBMARINE REPEATER

Lucien Rocton, Malakoff, France, assignor to Campagnie Industrielle des Telecommunications Cit-Alcatel,, Paris, France

Filed Dec. 18, 1972, Ser. No. 316,027
Int. Cl. H02g *15/14*
U.S. Cl. 174—70 S **8 Claims**



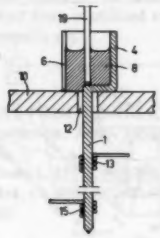
Connection device for connecting a submarine repeater and a coaxial cable having an outside conductor made of aluminum, comprising particular means to be implemented for connecting a repeater to a submarine cable of the coaxial type whose outer conductor is made of aluminum, these means being imposed by the necessity of avoiding the forming of an electrochemical couple between the aluminum of the line cable and the copper of the connecting cable of the repeater having sea water as its electrolyte.

3,780,211

INSULATING PRINTED-CIRCUIT BOARD HAVING PIN-SHAPED CONNECTING MEMBERS

Francis Vernet, 49, rue Gay-Lussac, Paris, France

Filed Dec. 29, 1971, Ser. No. 213,252
Claims priority, application France, Jan. 8, 1971, 7100487
Int. Cl. H05k 1/10
U.S. Cl. 174—68.5 4 Claims



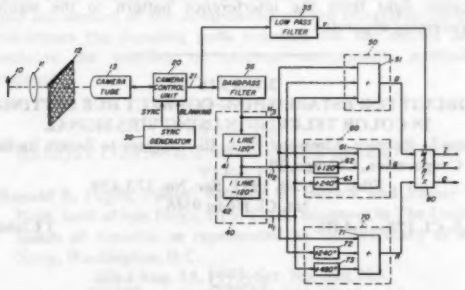
A printed circuit board having connection members mounted thereon. Connecting wires of circuit elements are inserted into sleeves of the connection members which are inserted in the insulating printed-circuit board. The connecting wires are then connected by means of solder carried in the sleeves. The sleeves project from one side of the board, and pin-shaped sections of the connection member project from the other side of the board.

3,780,212

COLOR FILTER AND SINGLE TUBE COLOR TELEVISION CAMERA SYSTEM UTILIZING SAME

William E. Glenn, Jr., Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,892
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 18 Claims



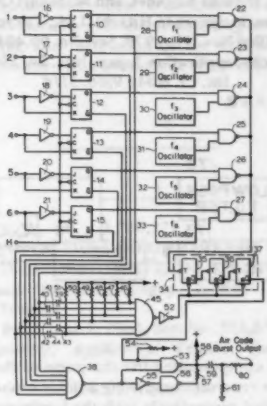
A system for generating three coherent color component signals representative of the color content of a scene. A color stripe filter is disposed in the optical path of the scene, the filter having three sets of parallel stripes, each set having a different characteristic color and a different orientation in the plane perpendicular to the optical path. Means are provided for electronically scanning the image projected through the filter in a line pattern and for generating signals representative of the filtered image. Delay means responsive to the output of the scanning means simultaneously derive first, second, and third video signals generated during three successive scanlines. Further provided are first, second, and third combining means, each of which combines the three video signals in a different phased relationship to generate one of the coherent color component signals. In a preferred embodiment of the invention, yellow, cyan, and magenta colored stripes are utilized to derive the red, green and blue primary color signals.

3,780,213

AIR CODE BURST GENERATOR

Hyacint E. Harna, Cicero, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 20, 1971, Ser. No. 209,975
Int. Cl. H04n 1/44; H03k 1/00
U.S. Cl. 178—5.1 12 Claims



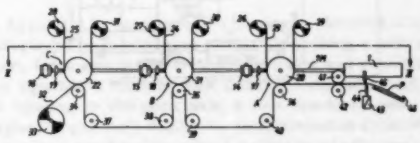
An air code burst generator for a subscription television system generates a discrete-frequency burst signal for each of a plurality of different applied code pulses. A higher harmonically-related continuous-wave signal is generated by a crystal controlled oscillator and divided down to the burst frequency by a counter, which is reset to an initial counting state upon the receipt of each code pulse to insure proper phasing of the transmitted burst signals. A novel output circuit maintains a predetermined average output level in the absence of burst signals.

3,780,214

METHOD AND APPARATUS FOR MAKING COLOR PRINTS ON PAPER

Friedrich Bestenreiner, Grunwald; Josef Helmberger, Munich; Rudolf Muller, Deisenhofen, and Walter Simm, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 16, 1971, Ser. No. 172,158
Claims priority, application Germany, Aug. 17, 1970, P 20 40 665.9
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R 34 Claims



Color prints of multicolored originals are obtained on absorbent paper by exposing recording layers each of which consists of a differently pigmented material to the action of electrooptically regulated laser beams so that the thermal images formed by the beams are representative of correspondingly colored portions of the original. The thermal images are applied to a strip of paper so that the differently colored images of the same original overlie each other. The recording layers can be provided on the paper strip or on discrete expendable or reusable flexible carriers which are transported across the paths of the respective laser beams. Such beams are produced by a 10.6μ–CO_2 laser which emits a main beam and by partly

and fully reflective mirrors which are placed into the path of the main laser beam. The recording layers may consist of liquid, pasty or pulverulent material.

3,780,215

CIRCUIT FOR COMPENSATING SHARPNESS OF PICTURE IN COLOR TELEVISION RECEIVER

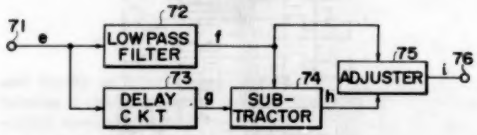
Akira Shibata, Higashi-Koganei, and Masanori Oguino, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 17, 1970, Ser. No. 90,404

Claims priority, application Japan, Nov. 24, 1969, 44/93584

Int. Cl. H04n *9/00, 5/14*

U.S. Cl. 178—5.4 R **1 Claim**



A circuit for compensating the sharpness of the picture in a color television receiver comprising a delay circuit and a low-pass filter applied respectively with the luminance signal in a video signal, and a subtractor connected to the delay circuit and the low-pass filter to receive the respective outputs from them whereby to impart a preshoot and an overshoot to the luminance signal.

3,780,216

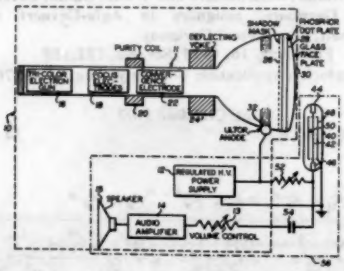
APPARATUS FOR DETECTING IONIZATION RADIATION EMANATING FROM A TELEVISION RECEIVER

Frank Viscardi, 16 Benson Rd., Glen Rock, N.J.

Filed July 13, 1971, Ser. No. 162,050

Int. Cl. H04n *9/16, 5/44*

U.S. Cl. 178—5.4 R **7 Claims**



An apparatus for detecting ionization radiation, such as x-ray radiation, emanating from a television receiver such as the color picture tube, voltage regulator tube and high voltage rectifier tube thereof. The apparatus includes a detection means, such as a Geiger counter tube. This tube is operatively connected in parallel to the high voltage supply that drives the picture tube and the audio portion of the receiver for providing an aural alarm signal through the speaker in response to the detection of radiation above a minimum allowable level. If the high voltage rises, such as due to failure of the high voltage regulation circuit, the sensitivity in the Geiger tube rises, as does the amount of radiation, which causes a distinct aural alarm through the speaker.

3,780,217

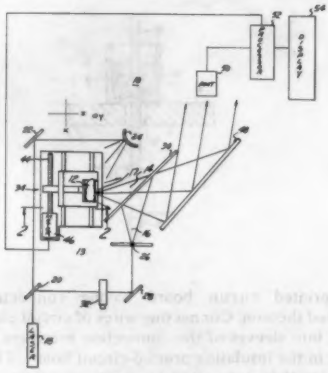
HETERODYNE IMAGING DEVICE FOR PROVIDING HIGH RESOLUTION IMAGES

Takeo Sawatari, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 11, 1972, Ser. No. 252,232

Int. Cl. H04n *1/26, 7/18*

U.S. Cl. 178—6 **10 Claims**



Several heterodyne microscopes are illustrated herein in which light from a point source is directed to interfere with light scattered from an object to provide a large area interference pattern representing a point on that object. Scanning apparatus varies the interference pattern to represent different object points. Conventional heterodyne signal processing apparatus processes light from the interference pattern to provide an image. The resolution of the image is determined by the size of the point source and by the percentage of the area of the interference pattern from which the processing apparatus receives signals. A high resolution image is obtained by using a small pinhole aperture to provide the point source and by using a diffusive surface to receive and scatter light from the interference pattern to the signal processing apparatus.

3,780,218

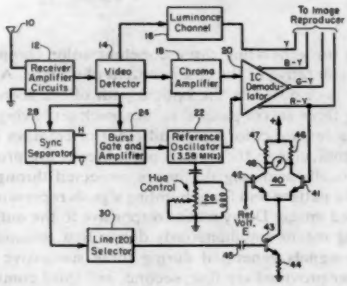
CIRCUIT FOR ESTABLISHING CORRECT HUE SETTING IN COLOR TELEVISION USING VIRS SIGNAL

John L. Rennick, Elmwood Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 20, 1971, Ser. No. 173,439

Int. Cl. H04n *9/46*

U.S. Cl. 178—5.4 HE **1 Claim**



A circuit arrangement for a color television receiver for indicating correct hue control setting by utilizing a VIR signal component included as part of the received television signal. A differential amplifier is gated on during the occurrence of

the VIR signal whereby an appropriate output of the receiver's demodulator, e.g., the R-Y color-difference output, is compared with a suitable reference voltage and a control voltage developed if there are any phase differences between the chrominance reference information included in the VIR signal and the color burst signal controlling the output frequency of the reference oscillator. In one embodiment a metering circuit is connected between respective outputs of the differential amplifier as a visual indication for setting the conventional viewer-operated hue control. In another embodiment, a closed or phase locked loop is utilized to effect any necessary hue corrections automatically.

3,780,219

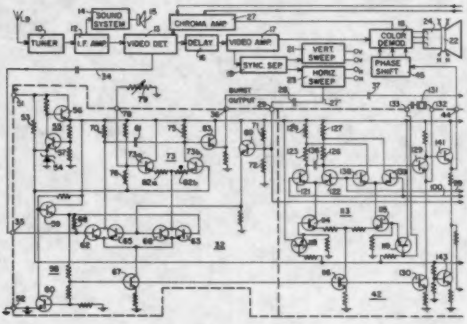
SIGNAL PROCESSING CIRCUIT

John J. O'Toole, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 1, 1972, Ser. No. 258,846

Int. Cl. H04n *9/44*, *9/48*

U.S. Cl. 178—5.4 HE 20 Claims



A color television receiver has an integrated circuit burst amplifier and hue control, voltage controlled subcarrier oscillator, APC detector and ACC detector. Simplified filtering and adjustment of the components on the integrated circuit minimizes the bonding pads required for the circuit and reduces the number of external components normally required.

3,780,220

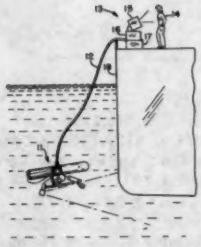
REMOTE CONTROL UNDERWATER OBSERVATION VEHICLE

Ronald B. Fugitt, Power; Richard W. Uhrich, and Jimmy L. Held, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1972, Ser. No. 280,703

Int. Cl. G03b *17/08*; H04n *7/18*

U.S. Cl. 178—6.8 11 Claims



The submarine vehicle is connected to a surface operating station by means of a control tether. The control tether contains conduits supplying hydraulic fluid under pressure as well as electrical power to the submarine vehicle. The submarine vehicle is controlled in depth by means of a buoyancy chamber comprising two telescoping chambers which are displaced with respect to each other by means of an internal motor means. A support system attached to the buoyancy chamber provides mounting for a camera to view the underwater location surrounding the submarine vehicle. A combination navigation instrument is mounted on the submarine vehicle and cooperates with the camera to provide an indication of heading and inclination of the vehicle as well as a number of turns the vehicle has made since its launch.

3,780,221

MEASURING OF THE COORDINATES OF A SUBJECT THROUGH A TELEVISION RECEIVER

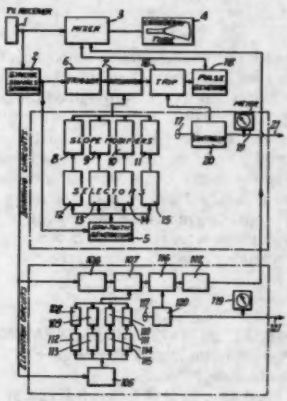
Jean Raymond Narbaits-Jaureguy, 1, Rue Louis Mercier, Malakoff, France

Filed June 8, 1964, Ser. No. 373,577

Claims priority, application France, June 7, 1963, 63937296

Int. Cl. H04n *3/00*

U.S. Cl. 178—6.8 2 Claims



1. Apparatus for measuring the bearing or elevation of a target displayed on a television screen, comprising a television camera for scanning the area of the target and providing a video signal to a receiver with a cathode ray tube, and, for each bearing or elevation axis, a first saw-tooth generator energised respectively during the synchronisation cycle of the receiver by a synchronising signal, a plurality of selectors comprising triggers successively actuated by a plurality of separate increasing voltages of said saw-tooth signal, a corresponding plurality of slope modifiers each comprising in series an electronic switch and a capacity or a resistance placed in parallel with respect to each other, an integrator R/C incorporating these capacities or resistances and providing a distorted saw-tooth signal, a trip circuit which operates when the voltage of said distorted saw-tooth signal exceeds an adjustable reference voltage and provides a pip signal, a voltmeter measuring said reference voltage, a generator of short pulses of predetermined length energized by said latter trip circuit, and a mixer for adding the video signal and said short pulse and suppling the whole to the T.V. receiver.

3,780,222

ELECTRONIC WEAVE COMPENSATION

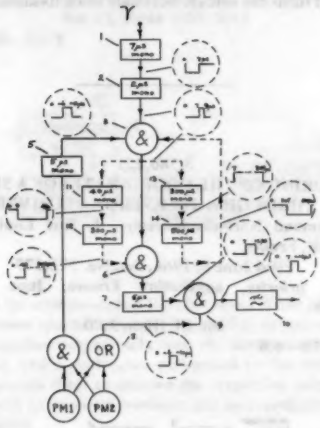
Barry Thomas Pickstock, London, and Denis Manktelow Neale, Brentwood, both of England, assignors to EVR Enterprises, London, England

Filed Mar. 13, 1972, Ser. No. 234,166

Claims priority, application Great Britain, Mar. 12, 1971, 6,772/71

Int. Cl. H04n 5/36

U.S. Cl. 178—7.2 3 Claims



In a system for reproducing television signals from a photographic record medium in which the film is scanned by a flying spot scanner as it is transported through a film gate, apparatus for reducing the effect of lateral weave of the film as it passes through the gate. The effect of weave in the finally reproduced television signal is reduced by generating a weave compensation signal representative of the deviation of the film record medium from a standard datum, and then using that signal to effect an appropriate transverse movement of the scanning raster as to compensate for transverse movement of the film as it passes the scanning gate.

3,780,223

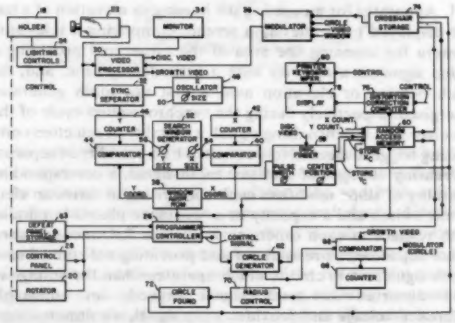
ANTIBIOTIC SENSITIVITY MEASUREMENT SYSTEM

Russell C. Perry, Smithtown, N.Y., assignor to Artek Systems Corp., Farmingdale, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,351

Int. Cl. G06f 3/05; G06m 11/04; H04n 7/18

U.S. Cl. 178—6.8 20 Claims



An antibiotic sensitivity measurement system which measures and displays the size of zones of inhibition which develop around discs of antibiotics on a microbiological diffusion assay. The system first accurately locates the actual centers of each disc by generating a search window and finding each disc from a digitized picture within the window. The system then generates a plurality of concentric circles at predetermined increments about each center until a required number of coincident points are detected between the circles and the digitized perimeter of the zones.

3,780,224

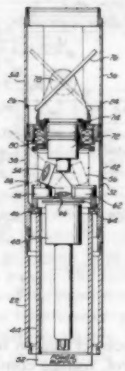
OPTICAL SYSTEM FOR TELEVISION CAMERA

Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,883

Int. Cl. H04n 5/26

U.S. Cl. 178—7.2 8 Claims



An electro-optical mast system having a plurality of cameras mounted in a vertical array, each of the cameras being operable to view a predetermined portion of 360° in a horizontal plane. Switching means are provided for alternately switching one of the cameras to an operable condition. Each of the cameras may have a field of view formed of a pair of opposed acute angles and switching means are provided for the field of view for switching the field of view from one of the acute angles to another of the acute angles. In addition, an overhead camera may be provided having a field of view whose axis is perpendicular to the horizontal plane. Moreover, each of the cameras may have a movable mirror associated therewith. The mirror is rotated in azimuth and elevation for target tracking operation of the camera in combination with a telescopic lens.

3,780,225

TACTILE COMMUNICATION ATTACHMENT

Thomas D. Shannon, 486 Broadway, New York, N.Y.

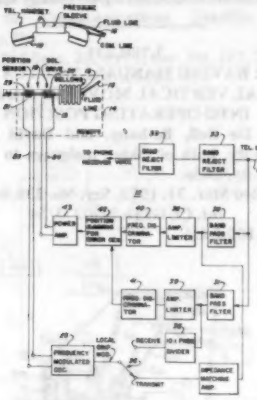
Filed Jan. 3, 1972, Ser. No. 214,892

Int. Cl. H04m 11/21

U.S. Cl. 179—2 A 13 Claims

A tactile communication device including a responsive grip attachment and a control unit which are electro-mechanical in operation and are intended to be used at least in pairs, to establish or permit tactile communication between two or

more parties. The two devices form a closed loop feedback control system whose output to each party is the pressure and



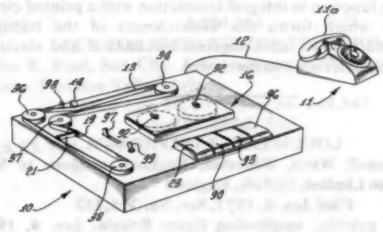
volume variations of the responsive grip attachment experienced by both parties.

3,780,226

TELEPHONE ANSWERING APPARATUS

Sava W. Jacobson, 4915 Tyrone Ave., Sherman Oaks, Calif.

Filed Nov. 3, 1971, Ser. No. 195,400
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R **30 Claims**



A telephone answering apparatus uses an announcement tape loop driven continously throughout an answering cycle by the same mechanism which drives a tape cassette for recording incoming messages. Upon occurrence of a ringing signal, the drive mechanism is energized, the telephone line is loaded inductively and the announcement is provided via an amplifier to the line. When an electrically conductive segment on the tape loop reaches a first set of contacts, a flip-flop is set to disable the amplifier and unsaturate a record head which then records the unamplified incoming message on the cassette tape. The answering cycle terminates when the tape loop conductive segment reaches another set of contacts. Provision is made to record a new announcement using the telephone as a microphone.

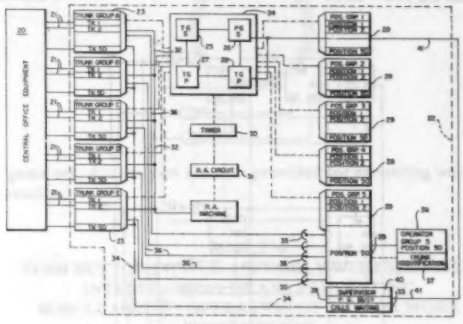
3,780,227

TELEPHONE CALL ANSWERING AND ALLOTTING TRANSFER SYSTEM

Robert M. Pirnie, Jr., and Robert M. Pirnie, III, both of Montgomery, Ala., assignors to Communication Equipment & Contracting Co., Inc.

Filed Feb. 22, 1972, Ser. No. 227,736
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 C **2 Claims**

The present disclosure is directed to a telephone call answering system where a customer installation has a plurality of incoming trunk lines and a plurality of operator serviced position circuits in which incoming calls are directed to available operator positions through a trunk and position preference and selector circuit which is actuated by a calling trunk cir-



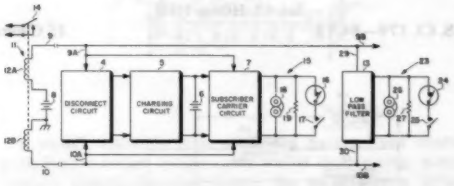
cuit. If all operator positions are busy after a predetermined time, a timer connects a recorded announcement machine into the calling circuit to advise the calling trunk that all positions are busy and to await an operator. The first free operator is automatically connected to any calling trunk.

3,780,228

AUTOMATIC DISCONNECT CIRCUIT FOR REDUCING DIAL PULSE DISTORTION CAUSED BY SUBSCRIBER CARRIER EQUIPMENT

James A. Stewart, Menlo Park, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 1, 1972, Ser. No. 230,704
Int. Cl. H04h *1/08*
U.S. Cl. 179—16 A **13 Claims**

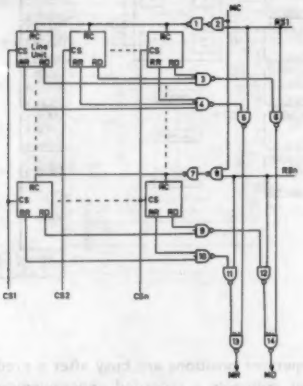


A local subscriber battery is connected through a battery charging circuit, a disconnect circuit, and a cable pair to a central office talking battery. The disconnect circuit includes a pair of transistor switches that are connected in series between associated lines of the cable pair and the charging circuit for selectively blocking line current to the latter at the start of a dial pulse; a first resistor-capacitor network for detecting initiation of a dial pulse; and a second resistor-capacitor network for controlling the operation of the switches. The second network is responsive to operation of the first network for holding the switches open to prevent charging current flowing on the cable pair for a prescribed time interval after detection of the leading edge of a dial pulse. This ensures that the contacts of the A-pulsing relay in the central office drop out in response to the dial pulse.

3,780,229
IDENTIFICATION OF SIGNALLING LINES BY SCANNING

Peter George Main, Seoul, South Korea, assignor to Sperry Rand Australia, Canberra, Australia

Filed Mar. 1, 1972, Ser. No. 230,809
Int. Cl. H04q *3/72*
U.S. Cl. 179—18 FF **6 Claims**

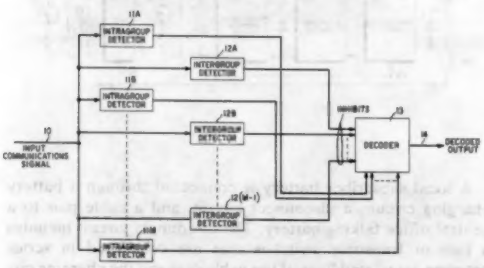


Automatic detection and location of a change of electrical state occurring on one of a plurality of lines by the use of individual bistable devices connected to the lines, the bistable devices having outputs connected in matrix-form and wherein a discriminating signal is repeatedly applied via a control logic to the outputs of a diminishing fraction of the total number of bistable devices, the control logic responding to a signal from a gate connected to detect the changed state of a bistable device located in the fraction of the total bistable devices next to be searched by the application of the discriminating signal.

3,780,230
MULTIFREQUENCY TONE RECEIVER

Edward George Bowen, Laurence Harbor, and George Wilmer Dick, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 10, 1972, Ser. No. 305,277
Int. Cl. H04m *1/50*
U.S. Cl. 179—84 VF **15 Claims**

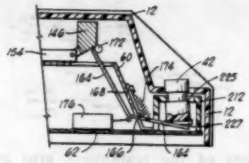


Apparatus for detecting the presence in a communication signal of each of a predetermined plurality of multifrequency tones, which might for example encode alpha-numeric symbols, without the use of sharply tuned bandpass filters. Each frequency in a multifrequency tone is selected from a different one of a plurality of frequency groups. Two or more first frequency detectors respond to and identify valid frequencies within each frequency group. One or more second frequency detectors monitor undesired signal energy between frequency groups which can generate spurious intra-group frequencies. A symbol decoder, jointly responsive to first and second detectors, is arranged to be inhibited by any of the second detectors when significant undesired signal energy appears.

3,780,231
RECORDER HAVING MANUALLY ACTUATED MEANS FOR PIVOTAL VERTICAL MOVEMENT OF THE HEAD INTO OPERATING POSITION

Lawrence R. De Bell, Bethany, and David D. Price, Jr., Oklahoma City, both of Okla., assignors to Economy Co., Oklahoma City, Okla.

Filed Mar. 31, 1972, Ser. No. 239,944
Int. Cl. G11b *21/02, 5/54*
U.S. Cl. 179—100.2 CA **11 Claims**

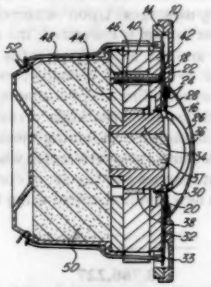


A tape transport device, particularly adapted for usage of standard-sized cassettes, that has an improved drive system and control system which contributes to higher reliability as well as economy of manufacture. The tape transport device includes a three motor drive system operating in conjunction with a lever-actuated control bar carrying both the reproducing transducer and capstan idler, and which may also carry a recording head for special designed usages. Control actuation members function in integral interaction with a printed circuit assembly which forms the underclosure of the transport device and imparts advantageous mechanical and electrical circuit characteristics to the device.

3,780,232
LOUDSPEAKER DIAPHRAGM

Leslie Russell Ward, Bildeston, England, assignor to Rola Celestion Limited, Suffolk, England

Filed Jan. 4, 1972, Ser. No. 215,332
Claims priority, application Great Britain, Jan. 4, 1971, 331/71
Int. Cl. H04r *7/02*
U.S. Cl. 179—181 R **9 Claims**



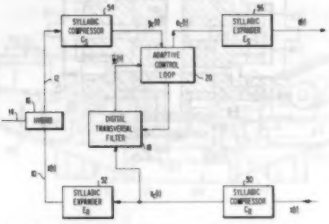
A diaphragm assembly for an electro-acoustic transducer has a central soft dome portion with a semi-rigid surround such that both the dome and surround can undergo substantial excursions. An electro-acoustic transducer incorporating the diaphragm has a totally enclosed chamber to the rear of the voice coil. The diaphragm assembly is particularly suited to the frequency range of 500 c/s to 5 Kc/s at powers of up to 50 watts.

3,780,233

ADPATIVE ECHO CANCELLERS WITH COMPANDORS

Samuel J. Campanella, Gaithersburg; Henri G. Suyderhoud, Potomac, and Michael Onufry, Jr., Gaithersburg, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Sept. 20, 1971, Ser. No. 181,779
Int. Cl. H04b 3/20
U.S. Cl. 179—170.2 5 Claims



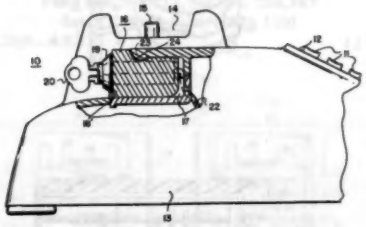
An echo canceller with compandors results in improved echo return loss enhancement. The incoming signal is compressed prior to its application to a digital transversal filter. The filter produces an approximation of the integral of the syllabically compressed incoming signal times a replica of the impulse response of an echo return path including a compressor. The echo signal is also syllabically compressed and applied to an adaptive control loop wherein the approximation is subtracted from the echo and the replica of the impulse response is varied in accordance with the difference obtained.

3,780,234

LOCK FOR PRESS BUTTON TELEPHONE

John K. Roof, Sun City, Ariz., assignor to Woodrow T. Morrow, Paradise Valley, Ariz.

Filed Apr. 20, 1972, Ser. No. 245,947
Int. Cl. H04m 1/66
U.S. Cl. 179—189 R 3 Claims



A lock for prohibiting the transmitting of outgoing telephone calls on a Touch Tone telephone without interferring with incoming calls.

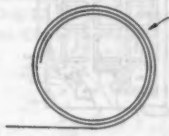
3,780,235

ROADBED APPARATUS FOR MODEL VEHICLES

Herman F. Deyerl, P.O. Box 3721, Santa Monica, Calif., and Robert J. Reynolds, 1543 Pine Valley, Ann Arbor, Mich.

Filed July 11, 1972, Ser. No. 270,654
Int. Cl. B60l 1/00
U.S. Cl. 191—13 9 Claims

Apparatus that provides a roadbed for electrically powered model vehicles wherein the running surface of the roadbed comprises conducting elements for transmitting electrical signals to the vehicles for steering and speed control. The roadbed is constructed and arranged in more than one modification each of which facilitates packaging and storage of the



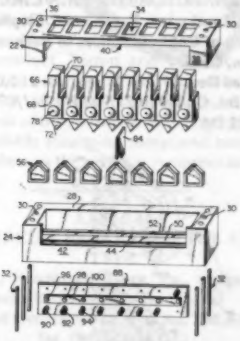
game set. Accessories are also provided for mounting on the roadbed.

3,780,236

PUSH BUTTON SWITCH ASSEMBLY WITH SLIDABLE INTERLOCKING MEANS PREVENTING SIMULTANEOUS OPERATION OF TWO OR MORE PUSHBUTTONS

Wayne B. Gross, Glastonbury, Conn., assignor to General Signal Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 867,325, Oct. 17, 1969, abandoned. This application May 18, 1971, Ser. No. 144,553
Int. Cl. H01h 9/26
U.S. Cl. 200—5 EA 12 Claims



A switch assembly with a housing having fixed contacts, push button means reciprocable within the housing, movable contact means disposed within the push button actuator means and slide transfer motion means disposed between adjacent push button actuator means to prevent operation of more than one push button at a time.

3,780,237

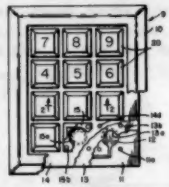
KEYBOARD SWITCH ASSEMBLY WITH MULTI-SECTIONAL KEY ACTUATOR

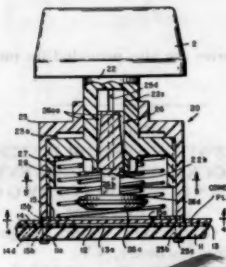
Richard E. Seeger, Jr., Topsfield, and John G. Coulter, Reading, both of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed Oct. 16, 1972, Ser. No. 297,721
Int. Cl. H01h 17/14, 3/12
U.S. Cl. 200—5 A 8 Claims

A keyboard array including a board having a conductive pattern thereon, a resilient conductive layer, a first or external plunger supported in a housing and slidable therein, a second or internal plunger supported in the external plunger and first

resilient biasing means urging the first plunger towards the housing and away from the conductive layer and a second



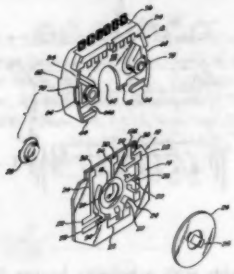


resilient biasing means urging the second plunger away from the first plunger and towards the conductive layer.

3,780,238
MULTI SECTIONAL ROTARY WAFER SWITCH ASSEMBLY WITH IMPROVED SUPPORT AND TERMINAL CONNECTOR FOR THIN CIRCUIT MODULE

Roy G. Brant, Huntington Beach, and Stephen K. Shepard, Pasadena, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 27, 1971, Ser. No. 212,061
Int. Cl. H01h *21/78*; H05k *1/07*
U.S. Cl. 200—11 DA **12 Claims**



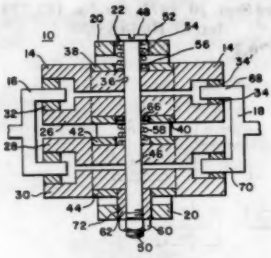
A carrier and terminal connector for a nonconductive circuit module in the form of a thin wafer having oppositely disposed flat surfaces and an electrical cicuit network deposited on at least one surface thereof including terminal pads positioned along at least one edge thereof. The carrier, terminal connector and non-conductive circuit module are used in a multi-sectional rotary wafer switch assembly. A conductive rotor engages printed circuit terminal paths disposed on the face of the circuit module.

3,780,239
ELECTRICAL CONTACT ASSEMBLY

Edward F. Guidosh, Hubbard, Ohio, assignor to Westinghouse Electric Corporation, Gateway Center, Pittsburgh, Pa.

Filed Oct. 27, 1972, Ser. No. 301,688
Int. Cl. H01h *19/58*
U.S. Cl. 200—11 B **6 Claims**

Electrical contact assembly having at least four contact structures. Each contact structure is positioned around a centering bolt. Compressed springs are located between each inner contact structure and between the upper contact structure and the upper end of the centering bolt. A sleeve is located between the lower contact structure and the lower end

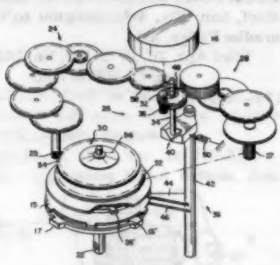


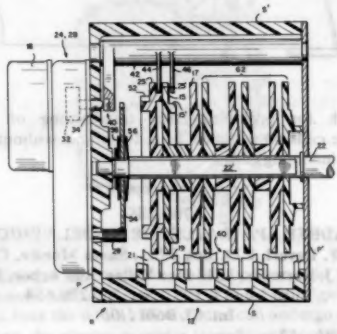
of the centering bolt. The centering bolt extends through openings in a contact carrier. Movement of the contact structures in a direction parallel to the axis of the centering bolt is provided by changing the compression of the springs and/or moving the centering bolt.

3,780,240
MECHANICALLY ACTUATED PULSER TIMER

Richard W. Stafford, Clayton, and Maurice E. Schuder, Indianapolis, both of Ind., assignors to P. R. Malloy & Co. Inc., Indianapolis, Ind.

Filed May 15, 1972, Ser. No. 253,286
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 R **9 Claims**





A clutch selectively couples a first set of cams to a constant speed timer motor, the clutch being activated in response to the first set of cams and a second set of cams.

3,780,241

SELF CANCELLING DIRECTION INDICATOR SWITCHES

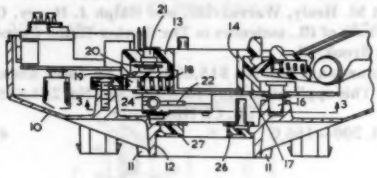
Edward Cryer, Higham, Nr. Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 24, 1972, Ser. No. 246,584

Claims priority, application Great Britain, Apr. 29, 1971, 12,248/71

Int. Cl. H01h 3/16

U.S. Cl. 200—61.27 2 Claims



A self-cancelling direction indicator switch for a road vehicle comprising a body for attachment to a vehicle. An operating member is movable with respect to the body to complete the indicator lamp circuits in respective positions of the operating member relative to the body, and there is provided cancelling means for returning the operating member to a neutral position. The cancelling means is carried by the body and includes first and second annular members secured together, and defining an external groove by means of which the annular members are held captive on an inwardly projecting portion of the body. The first annular member includes an inwardly directed key for engagement in a slot in the steering shaft, and a projection on the first annular member effects return of the operating member to its neutral position when the steering shaft is rotated relative to the body.

3,780,242

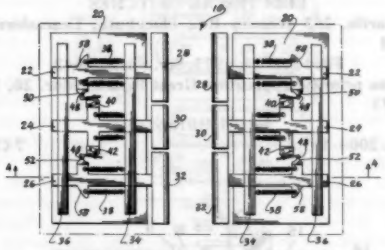
SAFETY DEVICE FOR INDUSTRIAL MACHINES WITH IMPROVED MECHANICAL SENSOR AND ASSOCIATED CIRCUIT BREAKER ASSEMBLY

Jack Bendror, Sands Point, N.Y., assignor to Robbins and Bendror Associates, Inc., Port Washington, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,767

Int. Cl. H01h 3/16; H02h 1/00

U.S. Cl. 200—61.41 12 Claims



A safety device for industrial machines, having a plurality of individually movable mechanical sensor elements, sensing means for sensing relative movement between mechanical sensor elements, and circuit making and breaking means controlled by the sensing means, whereby the circuit making and breaking means is actuated to stop the machine on which the safety device is installed, when one of the mechanical sensor elements encounters an obstruction, such as an operator's hand, and relative movement between mechanical sensor elements results.

3,780,243

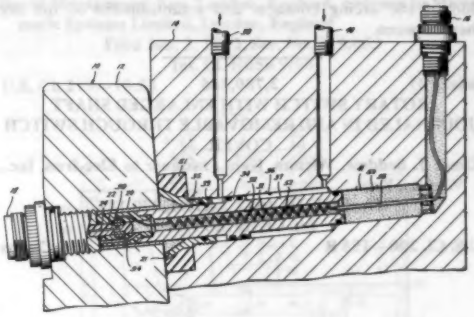
APPARATUS FOR MAKING AND BREAKING AN ELECTRICAL UNDERWATER CONNECTION BETWEEN RELEASABLE UNDERWATER MEMBERS

Paul C. Koomey, and Douwe de Vries, both of c/o P.O. Box 1637, both of Houston, Tex.

Filed Oct. 12, 1972, Ser. No. 296,880

Int. Cl. H01h 35/38, 33/60

U.S. Cl. 200—82 R 7 Claims



An apparatus for making and breaking an electrical underwater connection between releasable first and second members of an underwater connector by providing a fixed electrical contact on the first member and a movable electrical contact on the second member with means for moving the movable contact into and out of engagement with the fixed contact and penetratable sealing means on each of the members protecting the electrical contacts from water but allowing passage of the movable contacts into and out of engagement with the fixed contact. Piston and cylinder means on the second member for carrying the movable contact for making and breaking the electrical connection. A fluid bypass between both ends of the piston for allowing bypass of a flowable non-water soluble insulating compound between the male and female members as the piston is reciprocated.

3,780,244

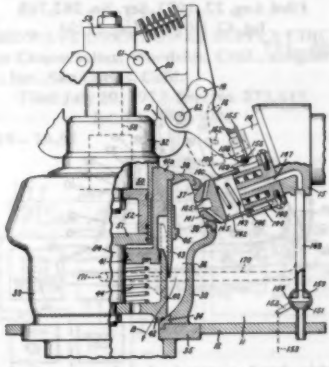
GAS BLAST CIRCUIT BREAKER OF THE AXIAL BLAST TYPE

John W. Beatty, Newtown Square, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 18, 1972, Ser. No. 298,639

Int. Cl. H01h 33/82

U.S. Cl. 200—148 B 9 Claims



A gas-blast circuit breaker comprises arcing contacts connected in parallel with the usual current-carrying contacts and

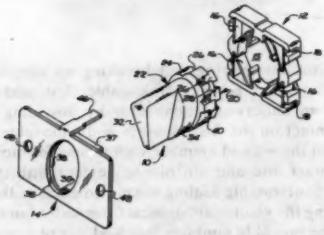
means for separating the arcing contacts to establish an arc therebetween after the current-carrying contacts have separated. One of the arcing contacts comprises an orifice through which the arc extends and through which a gas blast is developed by the opening of a blast valve downstream therefrom. The other arcing contact comprises a movable contact blocking flow through the orifice until the pressure downstream from the orifice has fallen in response to blast-valve opening to a sufficiently low level that critical flow will take place through the orifice immediately following separation of the arcing contacts and establishment of the arc therebetween.

3,780,245

ROTARY SWITCH WITH ENLARGED SHAFT JOURNALED IN AND REMOVABLE THROUGH SWITCH COVER

Elmer J. Beddow, Wichita, Kans., assignor to Elec-Iron, Inc., Wichita, Kans.

Filed July 10, 1972, Ser. No. 270,141
Int. Cl. H01h *19/14*
U.S. Cl. 200—155 R **10 Claims**



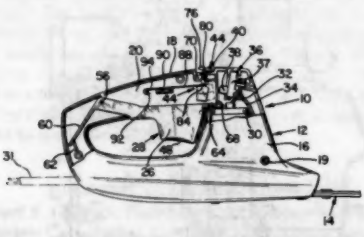
An electrical switch characterized by a series of rotatable contacts and fixed contacts in a switch body capable of making and breaking several circuits including an integrally formed one-piece rotary contact carrier, handle and enlarged connecting shaft with the width of the handle portion being no wider than the diameter of the connecting shaft so that the handle can be passed through the opening in the switch cover plate.

3,780,246

HAND-OPERATED TOOL WITH SWITCH ACTUATOR HAVING THREE-POSITION LOCK-OFF ASSEMBLY

Jacobus J. Beckering, Phoenix; Edwin J. Weber, and Ralph J. Secoura, both of Baltimore, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 22, 1972, Ser. No. 282,768
Int. Cl. H01h *21/10, 21/50*
U.S. Cl. 200—157 **7 Claims**



A portable, hand-operated, electric power tool such as a power shear for trimming grass or the like in which a switch actuator assembly includes a trigger on a handle for turning the tool "on" and "off". The trigger is normally biased "off" and can be manually operated to the "on" position when the operator has his hand on the tool handle. Means is provided to automatically lock the trigger temporarily in the "off" position when the operator removes his hand from the tool handle, and requires intentional release to reactivate the tool. The locking means is further constructed for permanent locking when the tool is stored between uses.

3,780,247

CONTACT ELEMENT HAVING NOBLE WEAR AREA

Robert M. Healy, Warrenville, and Ralph J. Hovey, Glen Ellyn, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 815,609, May 14, 1969, abandoned.
This application May 18, 1972, Ser. No. 254,815
Int. Cl. H01h *1/06*
U.S. Cl. 200—166 C **4 Claims**

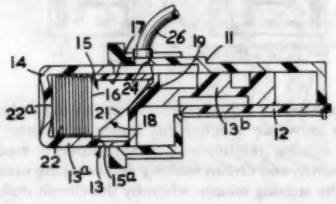
Electrical contact member having a limited surface area designed for active wearing engagement with another contact element, such limited area only having a relatively hard layer of noble metal affixed thereto, and the rest of the surface of the member having a relatively soft uniform layer of noble metal thereon, the structure of which corresponds to a self limiting immersion ion exchange deposition of that noble metal.

3,780,248

ELECTRICAL SWITCHES

Rex Martin, 263 Wensley Rd., Blackburn, Lancashire, England

Filed Feb. 23, 1972, Ser. No. 228,642
Claims priority, application Great Britain, Mar. 20, 1971, 7,541/71
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 A **7 Claims**



An electrical switch provided with a transparent, slidable, on-off operating member and a prism mounted in the operating member. The prism has a reflecting surface formed of two

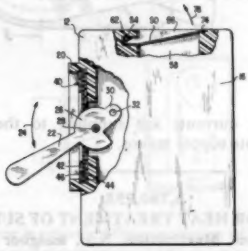
mutually inclined portions, each portion being disposed to reflect an image of one of a pair of legends indicating the operative condition of the switch so that either of the two images can be viewed at the end of the operating member depending upon the condition of the switch.

3,780,249

DUST SEAL HIGH PERFORMANCE BREAKER

George S. Harper, Cambridge, Md., assignor to Airpax Electronics Incorporated, Cambridge, Md.

Filed Apr. 28, 1972, Ser. No. 248,406
Int. Cl. H01h 9/04
U.S. Cl. 200—168 G **17 Claims**



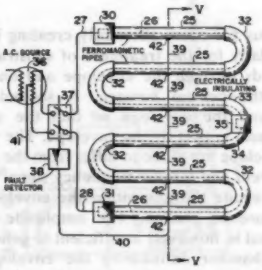
Disclosed is a high performance dust or explosion proof electrical circuit breaker. In one embodiment the breaker is provided with a dust seal flap for venting arcing gases to atmosphere while at the same time substantially reducing the entry of dust and dirt into the breaker housing. In a second embodiment the dust seal is replaced by a fine mesh screen for increased safety when the breaker is used in an atmosphere which may present a danger of explosion.

3,780,250

APPARATUS FOR HEATING THE SURFACE OF CONSTRUCTIONS

Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Nov. 2, 1971, Ser. No. 194,966
Int. Cl. H05b 9/00, 1/02; H02h 1/02
U.S. Cl. 219—10.49 **1 Claim**



An economical apparatus is provided for heating the surface of constructions such as a road, floor, wall, etc. which comprises at least two juxtaposed ferromagnetic pipes having a wall thickness of at least twice the skin depth of a.c. flowing therethrough and an insulated electric wire passing in series through each inside of said ferromagnetic pipes, both the ends of which are connected to an alternating current source. When an alternating current is passed through said insulated electric wire, a secondary current is induced along both the inner and outer skin portions of said ferromagnetic pipes and heat is generated therein.

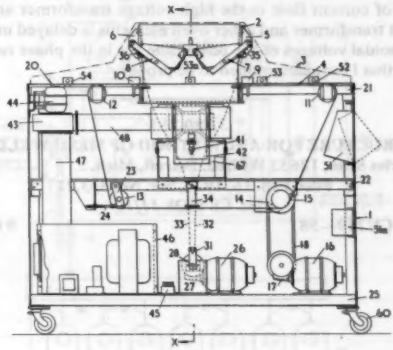
Further, the electrically neutral points of the ferromagnetic pipes are connected to each other by an electric conductor and a fault detecting means responsive to a flow of current in the conductor is provided to disconnect the insulated wire from the alternating current source upon occurrence of an electrical fault in the apparatus.

3,780,251

MICROWAVE HEATING APPARATUS

David Montgomery Kee, London, England, assignor to Micromatic Systems Limited, London, England

Filed Jan. 3, 1972, Ser. No. 215,053
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **10 Claims**



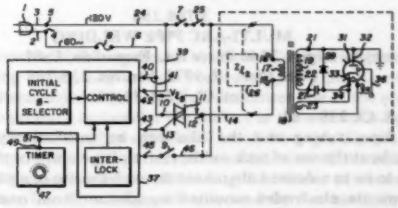
Microwave heating apparatus includes a microwave energy source feeding microwave energy to a cavity tuned to resonate at the frequency of the source. The cavity has aligned inlet and outlet ports and doors for closing the inlet and outlet ports during heating of an article within the cavity. Means are provided for inhibiting operation of the source while either door is not fully closed, and there is also provided an arrangement for transporting articles to be heated through the cavity. The microwave source may be a klystron coupled to the cavity through a cylindrical launch tube whose length is variable for tuning the cavity. A system is provided for sensing the presence of an article at preselected points on its path along the transport arrangement, and is connected to control circuitry for controlling operation of the arrangement. The apparatus may include manually operable means for setting a preselected heating time, or a system for automatically terminating heating on the detection of a predetermined radiation level in the cavity.

3,780,252

MICROWAVE OVEN POWER SUPPLY CIRCUIT

Paul Wythe Crapuchettes, Woodside, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Filed July 20, 1972, Ser. No. 273,615
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **17 Claims**



A microwave oven power supply includes a synchronous switch and a phase control circuit. The switch is electrically

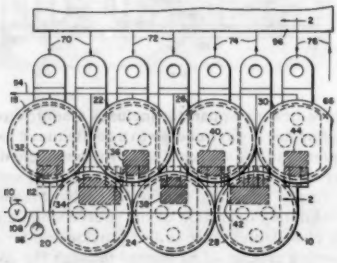
connected in series with the supply lines which, until actuated, maintains normally open the path for current flow to the transformers and other electrical components found within the oven power supply. An On-Off switch and interlocks are in series with the power line and an electrical circuit completed through the phase control circuit inhibits the operation of the power circuit until it is desired to commence cooking operations. The phase control circuit determines the proper phase of the applied line voltage for which the synchronous switch should be initiated. By design, this phase control circuit is matched to the transformer characteristics and senses the magnitude of the applied line voltage so that initial conduction of the synchronous switch falls within a preselected range which has been determined to minimize transient voltage spikes and/or in-rush current transients. In this way, the initiation of current flow in the high voltage transformer and filament transformer and other oven elements is delayed until the sinusoidal voltages of the power line are in the phase relationship that I have determined to be proper.

3,780,253

STRUCTURE FOR AND METHOD OF MESH WELDING

Charles Senn, 12633 Wilfred, Detroit, Mich.

Filed Feb. 16, 1973, Ser. No. 333,217
Int. Cl. B23k *11/10*
U.S. Cl. 219—58 **9 Claims**



A plurality of cylindrical welding guns for welding wire mesh in contact with each other staggered on each side of a linear transversely extending member of the wire mesh having off-center electrodes secured thereto with welding portions engageable with the wire mesh and insulated fixed electrodes positioned beneath the welding guns and wire mesh, which welding guns and electrodes secured thereto in conjunction with said fixed electrodes are adapted to produce welds at any of 2, 3, 4 and 6 inch spacing on simultaneous actuation of all of the welding guns through a single actuating media circuit having a single intake and a single outlet manifold, with all welding guns electrodes active as either welding electrodes or to provide a return circuit for welding electrodes during welding operations at all spacings, said welding guns beins constructed and arranged to permit location of all transformer structure therefor on one side of the welding guns without special clearance structure.

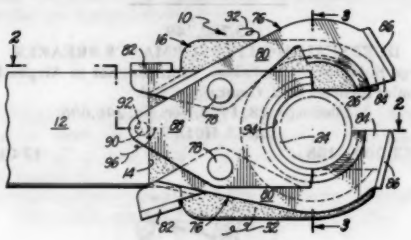
3,780,254

MULTI-ARC PIPE WELDING

Henry V. Rygiol, 3146 Purer Rd., Escovdido, Calif.

Filed Mar. 17, 1972, Ser. No. 235,705
Int. Cl. B23k *31/06*
U.S. Cl. 219—61 **3 Claims**

Pipe, tubing and the like can be satisfactorily welded without the use of tack welds, restraining clamps or the like so as to be in a desired alignment through the use of a plurality of separate electrodes mounted equidistant from one another around a ring-like area or path where a weld is to be created. Such electrodes are preferably mounted upon a holding means which in turn is rotatably mounted on a mounting member. Rotating means are provided for rotating the holding means around the path or area where a weld is to be created as



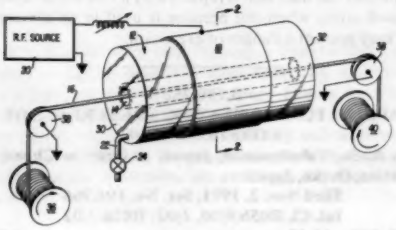
separate welding currents are supplied to the electrodes through appropriate supply means.

3,780,255

APPARATUS FOR HEAT TREATMENT OF SUBSTRATES

Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,014
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **19 Claims**

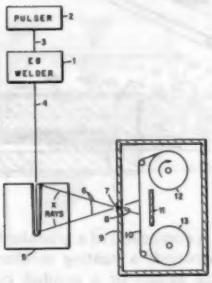


An apparatus for more efficiently creating high temperatures, particularly for the treatment of substrates. A central passage extends through the envelope and one electrode is disposed in the central passage. A second electrode is disposed around the envelope so that the electrodes are separated at least in part by the envelope. The gas conditions within the envelope are made to differ from the gas conditions exteriorly thereof and a radio frequency signal applied to the electrodes to excite the gas within the envelope to thereby generate a gaseous plasma. The amplitude of the radio frequency signal is, however, insufficient to generate a plasma outside the chamber defined by the envelope. Since the plasma does not contact the electrodes, the current flow between the electrodes is minimized and contamination of the gas by the electrodes is prevented. In addition, the surface area of the electrode in the central passage is substantially less than the surface area of the outer electrode thereby creating a plasma within the envelope which is more concentrated in the vicinity of the centrally disposed electrode. The plasma appears to induce a current in the centrally disposed electrode transverse to the axis thereof. This current is an order of magnitude higher than the average RF current between the electrodes and localized heating of the substrate is thus provided. A radio frequency balun transformer is provided for adjusting the power applied to the electrodes.

3,780,256
METHOD FOR PRODUCING SPIKE-FREE ELECTRON BEAM PARTIAL PENETRATION WELDS

Glenn L. Mara, Cupertino, Calif., and Robert C. McMaster, Delaware, Ohio, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 8, 1972, Ser. No. 278,858
Int. Cl. B23k 15/00
U.S. Cl. 219—121 EM 4 Claims

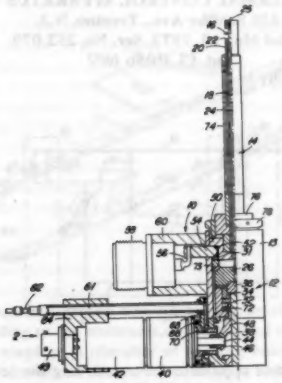


A technique is provided for prevention of "spiking" in electron beam partial penetration welds which involves pulsing the electron beam so as to prevent achievement of steady state conditions which cause such spiking. The rate of pulsing required is determined by the electron beam oscillation frequency which is a function of total beam power, beam power density, welding speed, and the properties of the particular material being welded.

3,780,257
ARC WELDING TORCHES FOR TUBE PLATE WELDING

Kenneth Stevens, Richmond, England, assignor to Foster Wheeler John Brown Boilers Ltd., London, England

Filed Sept. 1, 1972, Ser. No. 285,842
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 8 Claims

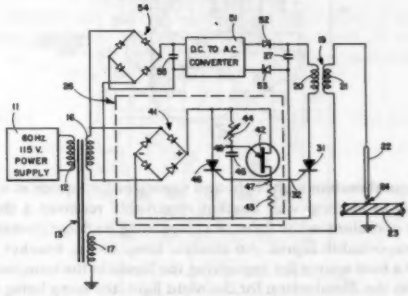


The torch described herein is for making internal bore welds. It has a stem carrying a non-consumable electrode and a body from which the stem projects. To make a weld, the stem is inserted into a bore so that the electrode is positioned near the join to be welded and the electrode is orbited around the join while an arc is maintained to make the weld. The stem has a core of high heat conductivity which is in contact with both the electrode and a heat sink block in the torch body. Provision is also made for the passage of inert shielding gas from the body and along the stem to the region of the electrode, this core and/or block having an extended surface area over which the inert shielding gas is arranged to pass so as to assist in cooling these and consequently the electrode.

3,780,258
ALTERNATING CURRENT ARC POWER SOURCE HAVING OPPOSITE POLARITY IGNITION PULSE

William F. Iceland, Los Alamitos, and Joseph W. Cuzzupoli, El Toro, both of Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 17, 1971, Ser. No. 154,114
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 6 Claims

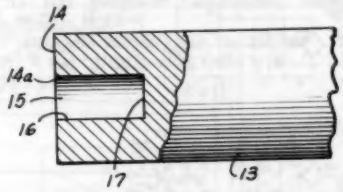


An alternating current arc welding having an alternating voltage power source for feeding energy to the welding arc and having a means for coupling, in series with the power source, a relatively high voltage impulse during the time the alternating voltage increases in absolute value so that the arc is re-ignited at the same phase angle during each half cycle.

3,780,259
NONCONSUMABLE TUNGSTEN ELECTRODE FOR ARC WELDING

Robert J. Meyer, Willoughby Hills, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 6, 1971, Ser. No. 187,063
Int. Cl. B23k 35/00
U.S. Cl. 219—145 2 Claims

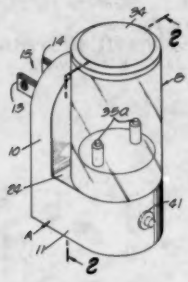


A nonconsumable tungsten or tungsten alloy electrode for arc welding having a cylindrical body ending in a planar end surface characterized by a cavity on the center line of the end surface to produce an annular flat surface at the electrode tip. The cavity is preferably a cylindrical cavity having a diameter in the range of 25 to 50 per cent of the diameter of the electrode and the cavity may terminate in a flat bottom or a conical portion. The tip configuration formed by the cavity improves the dimensional stability of the tip so that the arc formed during welding is concentrated and stabilized at the centerline of the electrode.

3,780,260
COMBINATION NIGHT LIGHT AND LIQUID VAPORIZER

Edwin C. Elsner, P.O. Box 112, Kanosh, Utah

Filed Aug. 4, 1972, Ser. No. 278,063
Int. Cl. F22b 1/28
U.S. Cl. 219—271 10 Claims

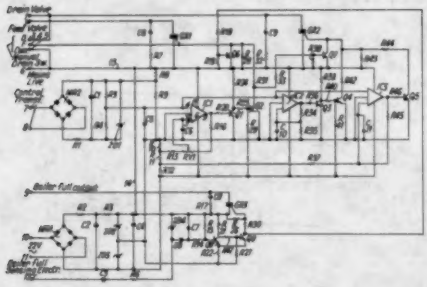


A combination night light and vaporizer for liquids in which a plug-in electric wall bracket removably receives a throw-away container in the form of a dispensing package containing the vaporizable liquid. An electric lamp in the bracket provides a heat source for vaporizing the liquid in the container as well as the illumination for the night light, the lamp being controlled through an energizing circuit which includes an electric flow path in the vaporizable liquid between spaced electrodes built into the container, and an overriding manually operable switch enables the establishing of a circuit between the electrodes when there is no liquid in the container and it is desired to energize the lamp for use as a night light.

3,780,261
AUTOMATIC CONTROL FOR ELECTRODE BOILERS

Raymond Herbert Eaton-Williams, Beech House, Pendennis Rd., Sevenoaks, England

Filed May 19, 1972, Ser. No. 255,058
Claims priority, application Great Britain, May 19, 1971, 15,886/71; Mar. 10, 1972, 11,287/72
Int. Cl. F24h 1/00
U.S. Cl. 219—324 11 Claims

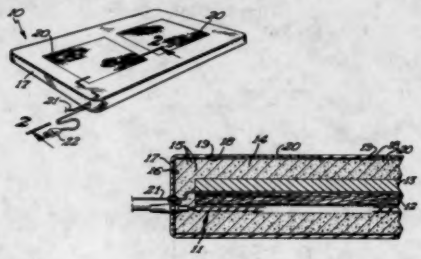


An electronic controller for an electrode boiler in which the heating current passing through an electrode depends upon the water level in the boiler, in which circuitry controls feed and drain valves to carry out an automatic repetitive cycle to feed water into the boiler to a predetermined level, to sense when boiling has reduced the level to another predetermined point, to open the drain valve to allow a quantity of water to drain out to remove solid matter precipitated during boiling, then to re-open the feed valve to restore the original level so that boiling may recommence. An alternative feed, boil, feed, drain cycle is provided.

3,780,262
THERMAL BANK

Robert L. Rudd, 1915 Prior Ave. N., St. Paul, Minn.

Filed July 28, 1972, Ser. No. 276,141
Int. Cl. H05b 1/00; F24h 7/00
U.S. Cl. 219—341 5 Claims

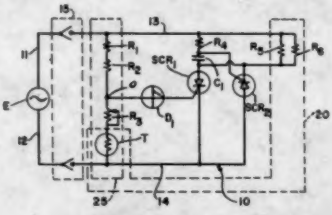


A thermal bank is comprised of a granular mass of polyvinyl chloride which surrounds a heating mechanism such as an electrical resistance heater or a conduit containing heated fluid. The granular polyvinyl chloride mass is formed by treating commercial dry flaked polyvinyl chloride with a small amount of stabilizer which causes the powder to form granules having interstices therebetween. The granular polyvinyl chloride mass not only serves as a high temperature insulator but also serves as an excellent heat storage system. A metallic foil surrounds the polyvinyl chloride mass and serves as a radiation shield, and an air impervious outer cover surrounds the foil and prevents convection losses from the mass. The thermal bank may be constructed as a heating pad provided with a window in the foil and plastic covers to permit controlled dissipation of the heat. The thermal bank may also be constructed as the primary storage center for heating a building structure deriving its heat from solar energy during the day and releasing it gradually during the night.

3,780,263
THERMAL CONTROL APPARATUS

Roman Kuzyk, 436 Schiller Ave., Trenton, N.J.

Filed May 10, 1972, Ser. No. 252,079
Int. Cl. H05b 1/02
U.S. Cl. 219—501 8 Claims



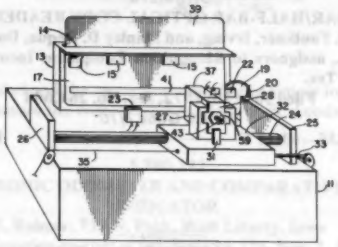
Thermal control apparatus for controlling the temperature of a photo-developing bath including electrically powered filaments disposed in the bath and energized by a control circuit responsive to the temperature of the bath. The control circuit includes a voltage divider connected across two leads connected to a conventional house outlet having the control point thereof connected to a four layer diode. The output signal from the diode is connected to gate the first of two opposite polarity silicon controlled rectifiers, with the second rectifier being capacitor-connected to gate at the end of the pulse of the first rectifier. The upper leg of the voltage divider includes a positive thermal coefficient resistor thermally coupled to the first rectifier and the lower leg includes a thermistor thermally responsive to the temperature of the bath.

3,780,264

ELECTROMAGNETIC READ/WRITE APPARATUS FOR STATIONARY CARDS

Nicholas Kondur, Jr., Rolling Meadows, Ill., and Lawrence P. Kobylarz, Howell, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 3, 1971, Ser. No. 120,457
Int. Cl. G06k 7/08
U.S. Cl. 235—61.11 D 7 Claims



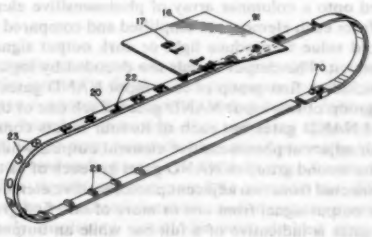
An apparatus for reading or writing a line of electro-magnetically encoded information across a stationary card. A resilient card aligning cam urges the card against a reference edge while a read/write head traverses the card, the cam having a ramp for preventing the head from catching the edge of the card as it moves from its rest position. The head is mounted by a single bolt through a head holder, the bolt being centered in complementary curved surfaces of the head and head holder for adjustability of the head.

3,780,265

APPARATUS FOR SENSING EMBOSSED INDICIA

Larry W. Lind, Spring Valley, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Feb. 22, 1972, Ser. No. 227,756
Int. Cl. G06k 7/04
U.S. Cl. 235—61.11 C 6 Claims



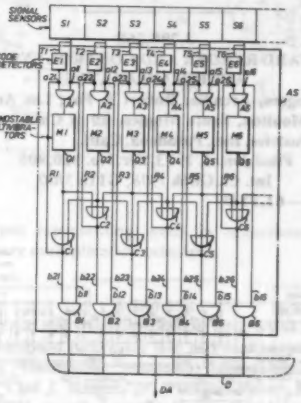
Apparatus for sensing and producing an electrical output corresponding to the numerals on a standard credit card. The apparatus employs a plurality of sensing belts, one for each digit to be sensed on the credit card. The belts are driven by friction clutches and are forced into contact with the numeral positions on the credit card by a bias button. Where the device is employed on the back side of the credit card, the belts contain raised numerals that pass over the corresponding depression of the numeral position on the credit card. When the proper numeral reaches the number area on the credit card, it drops in place, and locks up, to override the friction clutch. The belt includes an electrical contact, positioned by the belt lock up in a particular numeral, and therefore electrically identifies that numeral. A particular numeral order is provided for use with credit cards employing the Farington Font to avoid false sensing.

3,780,266

APPARATUS FOR SCANNING SIGNALS

Udo Mudsam, Konstanz; Ernst Reuter, Allensbach, and Stefan Maslowski, Aufheim, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 23, 1972, Ser. No. 228,548
Claims priority, application Germany, Feb. 25, 1971, P 21 08 837.9
Int. Cl. G06k 5/04, 7/08
U.S. Cl. 235—61.11 D 10 Claims



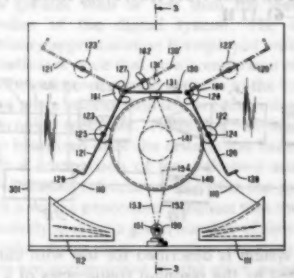
An apparatus for scanning signals along at least one track includes signal pickup device which is not guided on the track. The track may be subjected to transverse displacements relative to the pickup device. The pickup device is a plurality of signal sensors arranged in a row transverse to the track for scanning the track to detect information signals from the track. The number of sensors is selected so that at least one of the sensors detects the information signals during all transverse displacements and at least one other of the sensors is in a zone immediately adjacent the track. A selector circuit which is responsive to signals from all of the sensors is arranged to pass information signals from the sensors to a disjunctive circuit.

3,780,267

OPTICAL TAPE READER USING CYLINDRICAL LENS AS TAPE DRIVE WHEEL

David William Hagelbarger, Morris Township, Morris County, and Peter Steve Kubik, South Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed May 23, 1972, Ser. No. 256,089
Int. Cl. G02b 3/06; G06k 7/10
U.S. Cl. 235—61.11 E 8 Claims



A device is described for electrooptically reading the holes in a punched record tape. A highly polished transparent wheel

is utilized as the tape drive mechanism. Two pressure rollers located on opposite sides of this wheel along with beveled edges on the rim thereof maintain the record tape in proper alignment as it passes under photoelectric detection circuitry. A source of light is located below the transparent wheel and diametrically opposite the photodetection circuitry. The hub of the transparent drive wheel acts as a cylindrical lens to focus the light on the photodetectors. By detecting the amount of light transmitted through the record tape, the presence or absence of holes therein is ascertained and the information represented thereby is recovered.

3,780,268

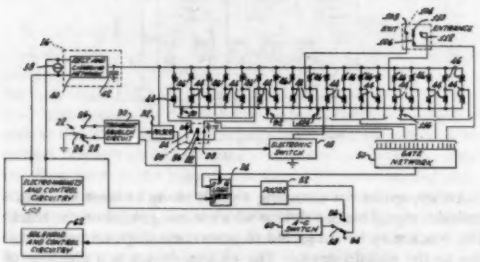
STATIC CARD READER AND CONTROL SYSTEM FOR ACCESS APPARATUS

Waldo I. Rogers, Arcadia; Robert J. Fox, Los Angeles, and Eric W. Moulton, Santa Monica, all of Calif., assignors to Rusco Industries, Inc., Pasadena, Calif.

Filed Jan. 4, 1973, Ser. No. 320,905

Int. Cl. G06k *7/08;* **G11b** *5/00*

U.S. Cl. 235—61.11 D **6 Claims**



A coded card is located at one end of a plurality of parallel sensors, each having a coil in series with a respective resistor, the junctions of such coils and resistors being connected to a gate network. A second card is inserted at the opposite ends of the sensors, and a switch actuated thereby effects operation of control circuitry to cause a voltage pulse to be applied across all resistoricoil combinations, simultaneously. Both cards have magnetized spots perpendicular to the card surfaces, and such spots are aligned with respective sensors. only where the fields of each pulsed coil and the spot aligned therewith are in the same relation, e.g., opposing, the gate network effects operation of a solenoid of access apparatus.

3,780,269

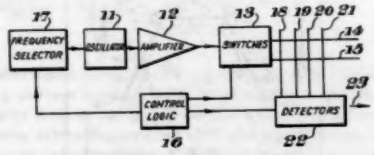
DATA READING SYSTEMS

Bernard A. Hunn, Berkhamstead, and Christopher Humphreys, Luton, both of England, assignors to Revenue Systems Limited, Harpenden, England

Filed June 13, 1972, Ser. No. 262,196

Int. Cl. G06k *7/08;* **H01f** *5/00;* **H04q** *5/12*

U.S. Cl. 235—61.11 H **13 Claims**



A reading system is described for use with cards bearing data constituted by the resonant frequencies of a number of spiral elements. The reading system includes a number of drive lines equal to the number of rows of spiral elements on the cards and a number of detector lines equal to the number of columns of spiral elements on the cards. The drive lines and the detector lines are arranged at right angles to each other so that there is minimum coupling between them. Varying frequencies are applied to the drive lines and, when a spiral element resonant at the frequency applied to a drive line is located at the intersection of that drive line and one of the detector lines, a signal will be induced in the drive line and can be used to control reading apparatus.

3,780,270

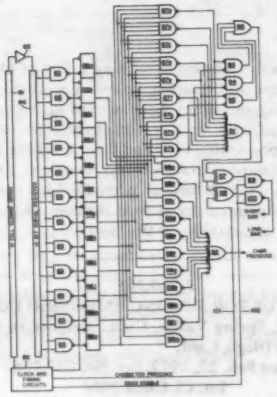
BAR/HALF-BAR OPTICAL CODE READER

Hubert D. Faulkner, Irving, and Stanley D. Requa, Dallas, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed June 20, 1972, Ser. No. 264,608

Int. Cl. G06r *7/10*

U.S. Cl. 235—61.11 E **15 Claims**



A moving image of a series of vertical bars and half-bars is projected onto a columnar array of photosensitive elements. Signals from each element are amplified and compared with a threshhold value to produce light or dark output signals for each element. The output signals are decoded by logic gates which include a first group of four input NAND gates and a second group of two input NAND gates. Each one of the first group of NAND gates has each of its four inputs connected from four adjacent photosensitive element outputs while each one of the second group of NAND gates has each of its two inputs connected from two adjacent photosensitive element outputs. An output signal from one or more of said first group of NAND gates is indicative of a full bar while an output from one or more of said second group of NAND gates is indicative of a character present and a half-bar if none of the gates of the first group are operated.

3,780,271

ERROR CHECKING CODE AND APPARATUS FOR AN OPTICAL READER

Patrick J. Sharkitt, Silver Spring, Md., and Richard R. Hayden, Washington, D.C., assignors to Sigma Systems, Inc., Arlington, Va.

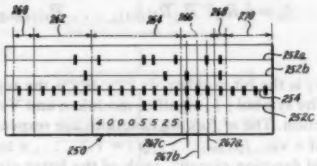
Filed Sept. 29, 1972, Ser. No. 293,556

Int. Cl. G06f *11/10;* **G06k** *5/00*

U.S. Cl. 235—61.11 E **14 Claims**

An error checking code and apparatus for use with an optical reader for reading an octal digital code which contains a

data digit field, an error checking count field and a parity field. The reader is designed for self-positioning over a code



bearing label and the apparatus comprises a simple logical circuitry to insure the correct reading of the optical code.

3,780,272

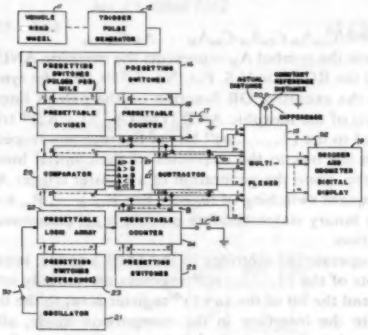
ELECTRONIC ODOMETER AND COMPARATIVE RATE INDICATOR

Thomas E. Rohner, 717 N. Park, West Liberty, Iowa

Continuation-in-part of Ser. No. 194,725, Nov. 1, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,198

Int. Cl. G01c *22/02*

U.S. Cl. 235—150.2 **10 Claims**



An impulse generator coupled to a road wheel provides pulses to the input of a divider, and pulses are supplied from the divider to a counter for storing coded signals indicating the distance traveled on a trip. An oscillator supplies signals through a logic array to another counter for storing additional signals corresponding to the desired distance for the elapsed time. The signals are compared to provide the difference between the two stored distances, and means are provided for selectively displaying actual distance, desired distance, or their difference.

3,780,273

ANALOG-TO-DIGITAL WATTMETER MULTIPLIER

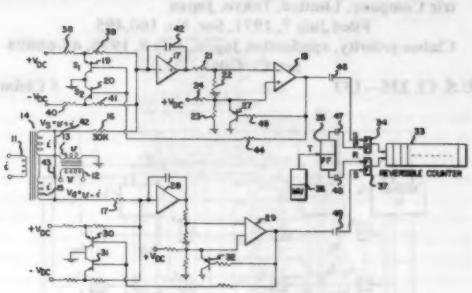
Douglas Walter Turrell, North Wales, Pa., assignor to Leeds & Northrop Company, North Wales, Pa.

Filed June 12, 1972, Ser. No. 262,120

Int. Cl. G06g *7/16, 7/18;* **G01r** *11/32*

U.S. Cl. 235—150.52 **4 Claims**

Operational amplifier circuitry converts two analog input signals into a digital output representing the product. Two pulse forming channels generate two pulse trains, one having a frequency representing the square of the difference between the input signals and the other having a frequency representing the square of the sum of the two input signals. The difference between these frequencies is obtained in a reversible counter. The count in the counter over a given period of time represents the product of the two input signals. Where the two input signals are voltage and current, the circuit obtains a



digital output representing watts in accordance with the quarter square multiplication principle.

3,780,274

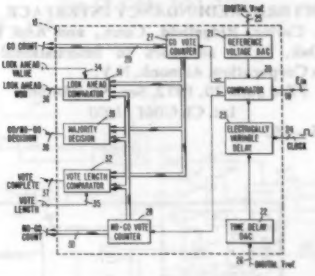
MEASUREMENT METHOD AND SYSTEM

Leon J. Thompson, deceased, late of Poughkeepsie, N.Y. (by Margaret Thompson, voluntary administratrix, Poughkeepsie); Carl J. Kugler, Jr., Pleasant Valley, and Garland H. Latta, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1972, Ser. No. 252,075

Int. Cl. H03k *13/20*

U.S. Cl. 235—151.31 **8 Claims**



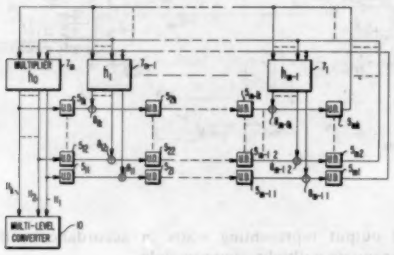
Measurement system for resolving a digital measurement of an unknown analog variable in a noise spectrum in which the spectrum is greater than or less than the least significant weighted value of the digital system. The measurement method of binary approximation is employed until the measuring system indicates once that on a comparison of vote counts the ratio of the unknown analog variable to the binary approximation has a given relationship to a predetermined criteria related to the noise spectrum. Thereafter, an incremental approximation is utilized once the criteria has been initially met to carry out a comparison of the unknown analog variable with an incremented reference and within the predetermined criteria until a voting procedure indicates that the criteria has been successively met for a given number of times. While this voting procedure takes place, the values resulting from the approximations are accumulated for the given number of successive votes. From this accumulation, the value of the unknown variable is calculated. A look-ahead procedure is also included in the system for accelerating the realization of the initial comparison with the prescribed criteria.

3,780,275

DEVICE TO GENERATE PSEUDO-RANDOM MULTI-LEVEL PULSE SEQUENCE

Katsuhiro Nakamura, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed July 7, 1971, Ser. No. 160,495
Claims priority, application Japan, July 8, 1970, 45/60095
Int. Cl. G06f *1/02*
U.S. Cl. 235—152 **5 Claims**



A device for generating a random pulse sequence provides the randomness of the occurrence of each pulse level in the pulse sequence. In general, it is known that the randomness of the binary pulse train is achieved by logical circuits operating on the Galois field GF(2). However, how to generate a random multi-level pulse train was not known heretofore. The multi-level pulse generator presented here comprises unit delay elements such as flip-flops arranged in a plurality of lines and rows and logical circuits to perform logical operations on the outputs from the unit delay elements on the Galois extension field $GF(p^k)$. (p is a prime number)

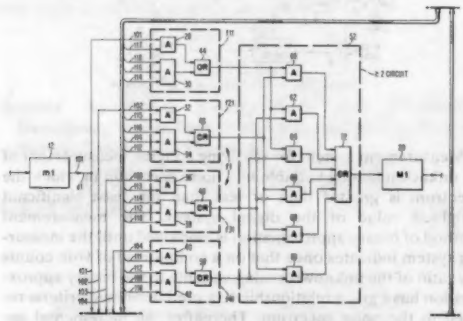
The randomness of this output is mathematically assured.

3,780,276

HYBRID REDUNDANCY INTERFACE

William C. Carter, Ridgefield, Conn., and Aspi B. Wadia, Shrub Oak, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1972, Ser. No. 264,666
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AE **7 Claims**



The interface disclosed herein is capable of operating in the TMR/S (triple modular redundancy with sparing), the comparison, and the simplex modes. The interface controls the interconnection between $m_1, \ldots, m_n$ identical sending modules and $M_1, \ldots, M_n$ identical receiving modules. To this end, there are provided $1, \ldots, n$ control registers which comprise $1, \ldots, n$ bits and an $(n+1)^{th}$ control register which comprises a single bit R_X. The register bits are employed to provide n^2 forcing functions for the outputs $d_1, \ldots, d_n$ of the sending modules which are represented by the following logical equation:

$$f_{ji} = d_j R_{ij} V \overline{R}_{ij} \overline{R}_{i|j+1|_n} \ldots \overline{R}_{i|j+n-2|_n}$$

wherein j is the bit number, $1, \ldots, n$, i is the register number $1, \ldots, n$, the symbol $|\ |_n$ signifies modulo n and V represents the OR function. The n^2 forcing functions are respectively applied in sets of n viz., $f_1 i, f_2 i, \ldots, f_n i$ $i = 1, 2, \ldots, n$ to $(1, \ldots, n)^{th}$ threshold function circuits, each of the latter circuits producing a "1" output when ≥ 2 of the inputs thereto are "1", the outputs of the $(1, \ldots, n)^{th}$ threshold function circuits being applied to the $M_1, \ldots, M_n)^{th}$ receiving modules, respectively. From the register settings and the sending module outputs, there are generated pairs represented by the logical equation

$C_{ij} = (d_i V \overline{R}_{ij} V \overline{R}_{ji} V R_X, d_j R_{ij} R_{ji} V R_X)$ for $j = i+1$ ($i = 1, 3, 5, \ldots, n-1$)

$C_{ij} = (d_i V R_{ij} V R_{ji}, d_j R_{ij} R_{ji})$ for $j \neq i+i$

wherein the ij pair in the first equation can take the values of $13, 14, \ldots, 1n, 24, \ldots, 2n, \ldots, (n-2)n$. From the pairs, (ij), there are generated register triggers having the following equations:

$$A_1 = \oplus / C_{12} \Lambda_M C_{13} \Lambda_M C_{14} \Lambda_M \ldots \Lambda_M C_{1n}$$
$$A_2 = \oplus / C_{21} \Lambda_M C_{23} \Lambda_M C_{24} \Lambda_M \ldots \Lambda_M C_{2n}$$
$$\vdots$$
$$A_n = \oplus / C_{1n} \Lambda_M C_{2n} \Lambda_M C_{3n} \Lambda_M \ldots \Lambda_M C_{(n-1)n}$$

wherein the symbol Λ_M represents the morphic AND function called the RCCO in U.S. Pat. No. 3,559,167, the symbol $\oplus$ signifies the exclusive OR function on the pair of lines that are outputs of the morphic AND. The $(A_1, \ldots, A_n)^{th}$ triggers are applied to the $(1, \ldots, n)^{th}$ bits of the registers respectively, to switch the bits to the opposites of their initial binary states whereby, upon the generation of a register trigger A_j and the consequent switching of register bits $R_{1j}, \ldots, R_{nj}$ to their opposite binary states, sending module m_j is disconnected from operation.

To operate the interface in the TMR/S mode, initially all of the bits of the $(1, \ldots, n)^{th}$ registers are initially set to the 1 state and the bit of the $(n+1)^{th}$ register is set to the 0 state. To operate the interface in the comparison mode, all the bits bearing the same numerical designation as the sending module which are to be compared in the registers bearing the same numerical designations as the sending modules which are to be compared are initially set to the 1 state with all of the other bits set to the 0 state. To operate in the simplex mode, all of the bits in the $(1, \ldots, n)^{th}$ registers except those bearing the same numerical designation as that borne by the register in which they are contained are set to the 0 state, the excepted bits being set to the 1 state. Also, in the simplex mode of operation, the bit of the $n+1^{th}$ register is set to the 1 state.

3,780,277

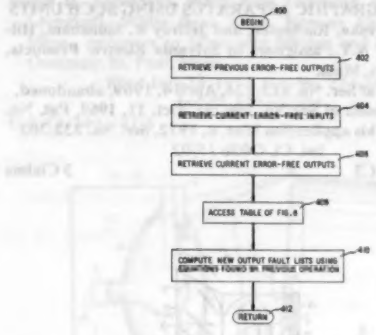
APPARATUS FOR PROPAGATING INTERNAL LOGIC GATE FAULTS IN A DIGITAL LOGIC SIMULATOR

Douglas Byron Armstrong, Two North Twp., Boulder Cty., Colo., and Richard Glenn South, Boonton, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 13, 1972, Ser. No. 271,501
Int. Cl. H03k *5/18*; G06f *15/20*
U.S. Cl. 235—153 AC **3 Claims**

An improved apparatus and method for propagating faults in a digital logic fault simulator. The method is a more accurate way of propagating internal faults through logic gates and flip-flops that are on loops, that is, gates and flip-flops having at least one input that can be traced back to their outputs. Internal faults are propagated through a loop gate by using the faulty input bit patterns to the gate to access a list of all possible internal faults of the gate in order to determine which internal faults should be propagated through it. Internal faults

are propagated through loop flip-flops by accessing an equation table to determine the correct relationship of the current



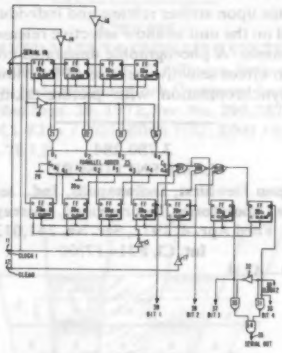
output fault lists to the previous output fault lists, the current input fault lists, and the internal faults of the flip-flops.

3,780,278

BINARY SQUARING CIRCUIT

John L. Way, La Canada, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 10, 1971, Ser. No. 122,812
Int. Cl. G06f 7/52
U.S. Cl. 235—164 **15 Claims**



An apparatus and method for squaring digital binary numbers which operates in cycles starting with the most significant bit followed by the less significant bits in sequence. If the bit being operated upon is a ONE, the smaller number formed from the bits having greater significance than this bit are added to the square of this smaller number (previously determined). The significance of each bit in this sum is increased by two and ONE placed at its least significant bit. However if the bit being operated upon is a ZERO; then the significance of each bit of the square of the smaller number formed from the bits having greater significance than this bit is increased by two and ZERO's placed in the least significant positions.

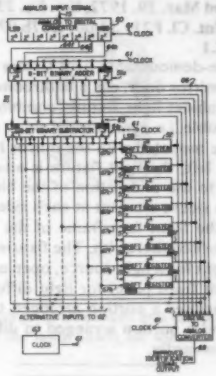
3,780,279

MEANS FOR EXTENDING THE IDENTIFICATION RANGE OF RADIO EQUIPMENTS USING REPETITIVE CODED IDENTIFICATION SIGNALS

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Jan. 17, 1972, Ser. No. 218,194
Int. Cl. G06f 7/38
U.S. Cl. 235—164 **5 Claims**

A signal processing means coherently adds a repetitively received code sequence to that previously received while incoherently adding accompanying noise and generates a replica of the code sequence which is "pulled up" out of the noise level. Complementary percentages of a code sequence



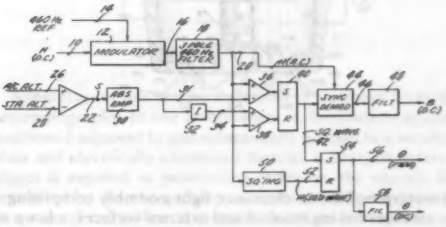
currently received and that previously received and stored are continuously added on a repetitive coherent basis by either analog or digital means.

3,780,280

RESOLUTION OF A TRIANGLE FROM HYPOTENUSE AND ONE SIDE

John E. Games, Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 3, 1972, Ser. No. 268,255
Int. Cl. G06g 7/22, 7/78
U.S. Cl. 235—190 **5 Claims**



A DC voltage having an amplitude proportional to the length of one side of a right triangle is compared with a sine wave, of arbitrary frequency, having a peak value proportional to the length of the hypotenuse of the triangle so as to generate a square wave of the same frequency as the sine wave, and having a phase relationship to the sine wave which is proportional to the angle opposite the known triangle side. The square wave is then used as the phase reference for synchronously demodulating the sine wave, the average value of the demodulator output being equal to the base, or unknown side, of the triangle. In addition, the sine wave may be squared-up and the original square wave and the squared-up wave used to set and reset a bistable device to provide a pulsewidth modulation indication of the angle opposite the known side. This may be filtered to provide a DC voltage proportional to the angle.

3,780,281

DEMOUNTABLE LIGHT FIXTURE FOR BATHROOM CABINET

Ernest F. Ohlhauser, West Chester, and Robert Boggild, Cincinnati, both of Ohio, assignors to The Celotex Corporation, Tampa, Fla.

Filed Mar. 29, 1972, Ser. No. 239,089
Int. Cl. F21v 33/00; A47b 97/00
U.S. Cl. 240—4.1 5 Claims

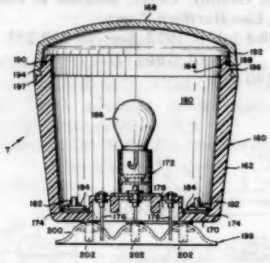
An attachable-demountable light fixture for a wall cabinet having a swing mirror door, e.g. a bathroom medicine cabinet, as well as a cabinet-light fixture combination. Where the cabinet is reversible, i.e. symmetrical about a horizontal plane, so that it can be mounted with the mirror hinge either on the right or on the left, the light fixture is attachable identically without regard to the orientation of the hinge. The fixture is provided with a sleeve element at each side, telescopingly engageable with the front face frame of the cabinet and automatically interlocked therewith. The fixture comprises a sheet metal encasement for a light source, open at the top, and having a translucent front panel for light diffusion. The translucent panel comprises a portion arranged to diffuse the light downwardly, and a portion arranged to diffuse the light outwardly and downwardly.

3,780,282

WATERPROOF TAIL AND CLEARANCE LIGHT

D. Richard Riley, P.O. Box 1663, Riverside, Calif., and Earl A. Andren, 920 N. Main St., Riverside, Calif.

Filed Sept. 11, 1972, Ser. No. 287,874
Int. Cl. B60q 1/30
U.S. Cl. 240—8.3 13 Claims



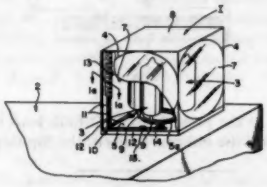
A waterproof tail or clearance light assembly comprising: a base member having internal and external surfaces; a lamp assembly secured to the base member internal surface; the lamp assembly including electrical leads extending through the base member to the base external surface; a cap member having a lens, the cap member cooperating with said base member to form a closed receptacle; one of the members including a shoulder portion and a circular sealing portion projecting from the shoulder portion in endwise fashion, the sealing portion having its diameter at the shoulder greater than its diameter at the free end thereof; the sealing portion being provided with O-ring retaining means and an O-ring positioned in the retaining means around the sealing portion; the other of the members being provided with an annular mating portion having an annular rim, the mating portion cooperating with the sealing portion to fit telescopically around the sealing portion and the rim abutting the shoulder portion; and means for securing the cap member to the base member; whereby when the cap member is secured to the base member, the sealing portion cooperates with the mating portion to compress the O-ring thereby rendering the receptacle formed by the base and cap members water tight.

3,780,283

PERCUSSION-IGNITABLE FLASH UNIT HAVING CONTACT-ACTUABLE PRE-ENERGIZED STRIKERS AND PHOTOGRAPHIC APPARATUS USING SUCH UNITS

Joseph V. Poweska, Rochester, and Jeffrey R. Stoneham, Hilton, both of N.Y., assignors to Sylvania Electric Products, Inc., Danvers, Mass.

Continuation of Ser. No. 813,524, April 4, 1969, abandoned, which is a division of Ser No. 766,751, Oct. 11, 1968, Pat. No. 3,596,581. This application Mar. 6, 1972, Ser. No. 232,303
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 3 Claims



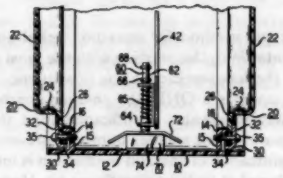
A flash unit having percussion-ignitable flash lamps and individual striker elements releasably retained in a pre-energized condition. The individual striker elements are mounted on the unit at a location for selective percussion firing of individual lamps upon striker release and individual access sites are provided on the unit to allow selective release of individual holding elements. A photographic apparatus cooperates with such units to effect selective release of individual striker elements in synchronization with picture-taking operations.

3,780,284

LAMP ENCLOSURE

Fred Arlington Dewhirst, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 4, 1972, Ser. No. 241,013
Int. Cl. F21v 17/00
U.S. Cl. 240—41 R 5 Claims



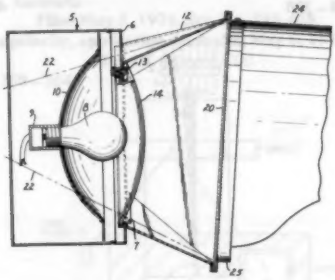
The lamp enclosure comprises a rectangular open-ended casing having an inverted L-shaped flange circumscribing its inside surface adjacent to each end thereof, the lateral leg of each flange extending toward the adjacent end. A domed translucent lens is positioned within each end of the casing, and each lens has an outwardly turned rim around its perimeter that is placed in engagement with the lateral leg of the adjacent flange. A rectangular retaining ring is placed over each rim and fastened to the adjacent flange to hold each lens in place. A lamp holder assembly is pivotally secured to the inside surface of the casing and it includes a latch having a spring-loaded bolt for engaging an opening in a catch plate mounted in juxtaposition therewith, the catch plate having an inclined ramp to the front and back of the opening.

3,780,285

TRAFFIC LIGHT CONVERSION KIT

Roger H. Appeldorn, White Bear Township, and Gunnar R. Ljungkull, White Bear Lake, Ramsey County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 24, 1972, Ser. No. 274,343
Int. Cl. F21r *13/04*
U.S. Cl. 240—41.3 6 Claims



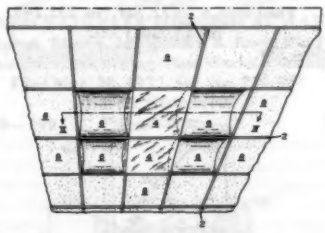
A kit which may be added to a conventional eight inch traffic signal to convert the traffic signal to a larger, i.e., 12 inch signal. The kit comprises a light diffusing roundel of colored glass positioned within the focus of a front positive Fresnel-type lens.

3,780,286

CURVED VAULT LUMINAIRE SYSTEM

Stephen T. Alexieff, and James C. Ollinger, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Sept. 20, 1972, Ser. No. 290,757
Int. Cl. F21v *13/00*; E04b *5/52*; E04f *19/06*
U.S. Cl. 240—78 LD 5 Claims



A normally flat lighted suspended ceiling system has been modified to incorporate the use of curved ceiling panels and lighting fixtures which have three-sided lenses. The light fixture will provide light through its normally downwardly facing lens. In addition, the curved ceiling panel permits the light fixture to transmit light from the sides of the lighting fixture. This provides an improved uniformity of illumination of both the ceiling and the area below the ceiling.

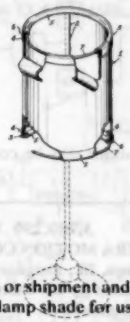
3,780,287

NEW LAMP SHADE

Jose Ramon Fauri, Pablo Alcover St. 55 & 57, Barcelona, Spain

Filed Mar. 23, 1972, Ser. No. 237,483
Int. Cl. F21v *1/06*
U.S. Cl. 240—108 D 1 Claim

A generally tubular lamp shade of flexible sheet material is provided with a flexible elastic ring embracing and secured to each of its upper and lower edges. Each ring has an inwardly extending resiliently bendable flange normally reversely curved to define an annular passage in which a metal ring is held by the resilience of the flange. The flange can be flexed to release the metal ring for removal so that the lamp shade may



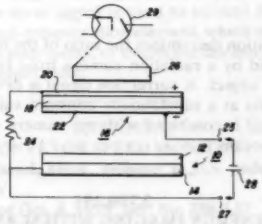
be flattened for storage or shipment and the metal ring may be reinstalled to erect the lamp shade for use.

3,780,288

APPARATUS FOR MINIMIZING IMAGE SMEAR DUE TO ION CAUSED UNDERCUTTING

Vernon W. Dryden, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed July 6, 1971, Ser. No. 159,904
Int. Cl. G01n *21/34*; H01j *37/26*; H05g *1/60*
U.S. Cl. 250—315 7 Claims



Apparatus for minimizing the smear of an image formed by xeroradiography. In one embodiment, a distributed capacitor, positioned adjacent to and substantially parallel to a sensitized plate and electrically connected thereto, is charged before an object is exposed to penetrating radiation, the electric field generated by the charged capacitor minimizing image smear. In a second embodiment, a metal electrode is coupled to the conductive substrate which comprises part of the sensitized plate via a lumped capacitor, the electric field generated between the metal electrode and plate minimizing image smear.

3,780,289

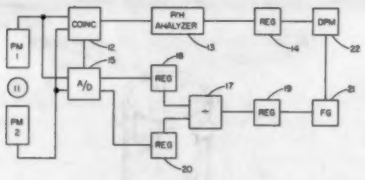
QUENCH CORRECTION IN LIQUID SCINTILLATION COUNTING

Gerardus Hulbrecht Kulberg, Amstelveen, and Roedolf Hendrik Deinert, Mijdrecht, both of Netherlands, assignors to G. D. Searle & Co., Chicago, Ill.

Filed Feb. 10, 1972, Ser. No. 225,234
Int. Cl. G01t *21/20*
U.S. Cl. 250—362 13 Claims

A means for determining counting efficiency in a liquid scintillation system. Pulse amplitudes are accumulated as are the number of pulses contributing thereto. The accumulated pulse amplitude sum is divided by the accumulated number of pulses to produce an average pulse amplitude for the pulses measured. The average pulse amplitude may be correlated to

average detection efficiency by an ascertainable function. Through average efficiency of detection the actual rate of



radioactive disintegrations may be computed from the count rate measured.

3,780,290

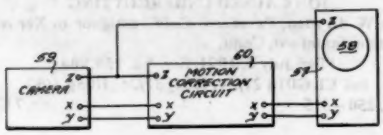
RADIATION CAMERA MOTION CORRECTION SYSTEM

Paul B. Hoffer, Chicago, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 28, 1972, Ser. No. 238,766

Int. Cl. G01j *39/18*

U.S. Cl. 250—303 **8 Claims**



The invention determines the ratio of the intensity of radiation received by a radiation camera from two separate portions of the object. A correction signal is developed to maintain this ratio at a substantially constant value and this correction signal is combined with the camera signal to correct for object motion.

3,780,291

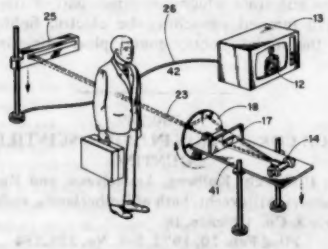
RADIANT ENERGY IMAGING WITH SCANNING PENCIL BEAM

Jay A. Stein, Framingham, and Roderick Swift, Belmont, both of Mass., assignors to American Science & Engineering Inc., Cambridge, Mass.

Filed July 7, 1971, Ser. No. 160,363

Int. Cl. G01t *1/20*

U.S. Cl. 250—363 **12 Claims**



A pencil beam of X-rays scans an object along a line of direction before an X-ray detector to produce an image of the line along a picture tube. By relatively displacing the object scanned and the line of scan in a direction transverse to the line of scan, a sequence of lines appear on the display to produce an image of concealed objects, such as guns.

3,780,292

APPARATUS FOR MEASURING THE NEUTRON FLUX IN A NUCLEAR REACTOR

Erich Klar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 72,460, Sept. 15, 1970, abandoned. This application Mar. 17, 1972, Ser. No. 235,787

Claims priority, application Germany, Sept. 16, 1969, P 19 46 758.4

Int. Cl. G01t *3/00*; G21c *17/00*

U.S. Cl. 250—390 **4 Claims**

An apparatus for measuring the neutron flux in the active region of a nuclear reactor has a plurality of individual neutron absorbing probes insertable into the active region of the reactor. One of the probes extends over the entire length of the active region and the remainder of the probes extend over progressively shorter lengths respectively of the active region. The probes have respective portions outside of the active region and a cable connection means is connected to these portions.

3,780,293

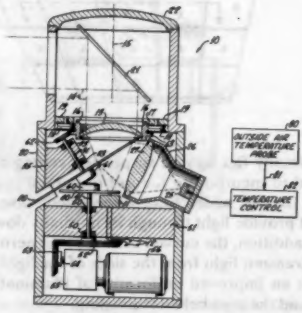
DUAL BEAM RADIOMETER FOR CLEAR AIR TURBULENCE MEASUREMENT

Edward F. Flint, 1400 S. Orange, Fullerton, Calif.

Filed Mar. 6, 1972, Ser. No. 232,147

Int. Cl. G01j *5/02*

U.S. Cl. 250—339 **19 Claims**



An improved dual beam radiometer comprising radiation detecting means; a source of reference radiation; a rotating chopper for alternately passing radiation from the atmosphere and reflecting radiation from the reference source onto the detecting means; a rotating filter disc having four sectors interposed in the radiation path between the rotating chopper and the detecting means for controlling the wavelength of the radiation applied to the detecting means; the rotating filter disc being operative, synchronously with the rotating chopper, to periodically change the wavelength of the atmospheric radiation and the wavelength of the reference radiation applied to the detecting means; and means for controlling the

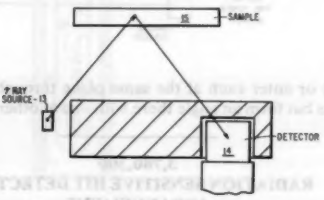
temperature of the reference source as a function of atmospheric temperature adjacent to the radiometer.

3,780,294

APPLICATIONS OF NUCLEAR RESONANCE FLUORESCENCE OF GAMMA RAYS TO ELEMENTAL ANALYSIS

Brian David Sowerby, Kirrawee, Australia, assignor to Australian Atomic Energy Commission, Congee, New South Wales, Australia

Filed May 5, 1971, Ser. No. 140,448
Claims priority, application Australia, May 6, 1970, 1105
Int. Cl. G01n *23/00*
U.S. Cl. 250—364 6 Claims



A method is provided for using nuclear resonance fluorescence of gamma rays for element analysis. The method involves irradiating a sample with gamma rays of the required critical energy and at the same time detecting the resonantly scattered radiation from the sample.

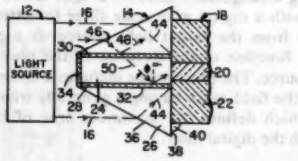
The technique is particularly adaptable to borehold prospecting, on-stream analysis in industry, the exploration of the ocean floor for mineral deposits, the analysis of the surface of planets and so forth.

3,780,295

LIGHT SOURCE COUPLER FOR OPTICAL WAVEGUIDE

Felix P. Kapron, Elmira, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,587
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 17 Claims



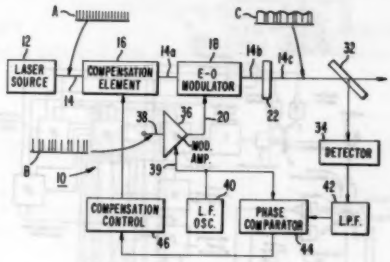
A light coupler for transferring optical wave energy to or from an optical waveguide. This coupler comprises a core of transparent material surrounded by a thin layer of transparent cladding material having a thickness less than a few wavelengths. A conically shaped member which surrounds the transparent layer has its base disposed adjacent to the end of the optical waveguide. The refractive index of the transparent layer is lower than that of the core and the conical member. To couple light to the waveguide, a light beam directed at the tapered surface of the conically shaped member is refracted thereby toward the transparent layer where a portion thereof tunnels into the core and is thereafter coupled into the waveguide. When it is utilized as an output coupler, light radiates from the tapered surface at an angle dependent upon the mode of propagation in the waveguide.

3,780,296

AUTOMATIC OPTICAL BIAS CONTROL FOR LIGHT MODULATORS

Armand Waksberg, and John Irving Wood, both of Dollard Des Ormeaux, Quebec, Canada, assignors to RCA Limited, Ste. Anne De Bellevue, Quebec, Canada

Filed Dec. 22, 1972, Ser. No. 317,740
Int. Cl. G01j *1/20*
U.S. Cl. 250—201 4 Claims



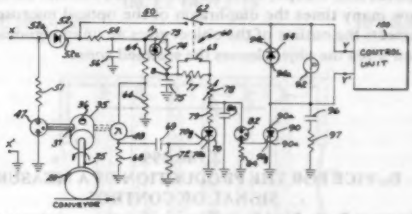
In an electro-optic laser beam modulation system wherein the polarization modulation of the laser beam is converted into intensity modulation by an analyzer positioned in the path of the beam, a photo detector detects a portion of the output beam to provide an error signal which is a function of any change in the average intensity of the output beam from a given value. The error signal is used to control the birefringence of an optical compensation element, which is positioned in the path of the laser beam, to return the intensity of the output beam to the given value.

3,780,297

CONVEYOR SPEED MONITOR

Fred Geary, Holland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,137
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R 20 Claims



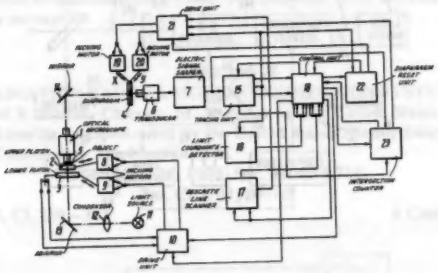
Light chopping means are coupled to a conveyor belt such that as the speed of the conveyor belt varies, a light path between a source of light and a photo-resistance cell is interrupted at a frequency directly related to the conveyor belt speed. The photo cell is coupled in an electrical circuit for detecting speed variations by detecting the resulting frequency variations of the light pulses. The electrical circuit provides an indicating signal when the speed of the conveyor belt reaches a predetermined level and also develops a control signal which can be employed for automatically regulating drive apparatus or other equipment associated with the conveyor system.

3,780,298

SCANNING METHOD AND A SCAN MICROSCOPE FOR ITS REALIZATION

Zhora Melkonovich Agadzhanian, Puschino, Mikroraion "V", 9, kv. 51, Moskovskaya oblast; Genrikh Romanovich Ivanitsky, ulitsa Festivalnaya, 15, Korpus 4, kv. 12, Moscow, and Alvian Matveevich Shamarov, Puschino, Mikroraion "V", 6, kv. 22, Moskovskaya oblast, all of U.S.S.R.

Filed July 15, 1971, Ser. No. 162,797
Int. Cl. G05b *1/00*
U.S. Cl. 250—202 2 Claims



A scanning method in which an object under investigation is stopped as soon as its outline is intersected by the optical axis of a fixed optical system and the outline of the object is traced out. After that, the image of the object is line-scanned within a rectangle in which the image is inscribed, while an indication that the next object has come into view is given by the equality of intersections of the object outline by the optical axis both when the object and when its image are displaced.

A scanning microscope using the above-mentioned method which has a tracing unit to trace out the outline of the object, while a limit-coordinate detector determining the extreme rectangular X- and Y-coordinates of the outline of the object "memorizes" these coordinates in the subsequent line scanning, the travel of the diaphragm of the optical microscope is limited by the extreme rectangular coordinates of the image. In the microscope, provisions are made for resetting the diaphragm to the starting position in which the outline of the object is intersected by the optical axis of the optical microscope, while an intersection counter determining how many times the diaphragm of the optical microscope intersects the outline of the object gives an unambiguous indication when the object leaves the scanned zone.

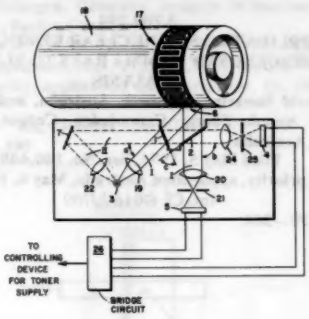
3,780,299

DEVICE FOR THE PRODUCTION OF A MEASURING SIGNAL OR CONTROL

Hartmut Bork, Fischbach/Taunus, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Aug. 7, 1972, Ser. No. 278,213
Claims priority, application Germany, Aug. 6, 1971, P 21 39 324.8
Int. Cl. G01n *21/48*
U.S. Cl. 250—209 10 Claims

A device for the production of a measuring or control signal, which device has a radiation source and a receiver for the measuring radiation, modified by the measured point, and for the unmodified reference radiation as well as a device for converting the receiver values into the measuring or control signal, characterized in that the device has an outlet window section and an inlet window section and that the radiation source, the receiver, and the window sections are so arranged that the measuring radiation and the reference radiation



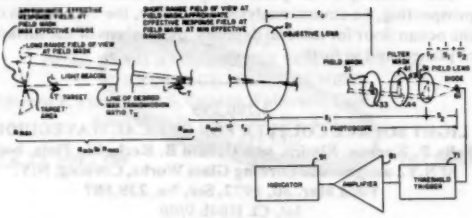
emerge or enter each at the same place through the window sections but form an angle there with one another.

3,780,300

RADIATION SENSITIVE HIT DETECTION ARRANGEMENT

Michael A. Kott, Marlboro, Mass., assignor to AAI Corporation, Cockeysville, Md.

Continuation of Ser. No. 888,266, Dec. 29, 1969, abandoned. This application Jan. 12, 1972, Ser. No. 217,048
Int. Cl. G01j *1/20*
U.S. Cl. 250—237 R 38 Claims



A hit detecting and indicating arrangement for a target having a light source thereon, in which the hit detection and indicating arrangement includes a light sensitive detection element with a digital gray scale filter for attenuating the light energy from the target light source as a generally inverse square function of the distance of the photoscope from the light source. The photoscope includes a lens system and a field mask, the field mask having a generally triangular field aperture which defines the maximum area of light transmission through the digital filter.

3,780,301

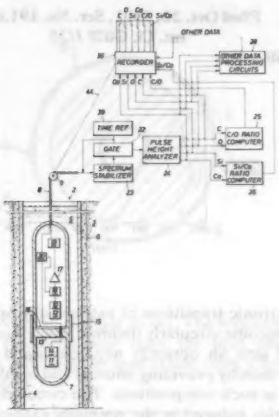
PULSED NEUTRON LOGGING SYSTEMS FOR DETECTING GAS ZONES

Harry D. Smith, Jr.; Dan M. Arnold, and Ward E. Schultz, all of Bellaire, Tex., assignors to Texaco Inc., Houston, Tex.

Filed Sept. 20, 1971, Ser. No. 182,036
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R 12 Claims

An illustrative embodiment of the invention estimated methods and apparatus for producing inelastic neutron scattering logs of earth formations surrounding a well borehole. The gamma rays emitted by nuclei of at least carbon, oxygen, silicon and calcium which are excited by inelastically scattered fast neutrons are observed by energy separation and are individually logged as a function of borehole depth. The silicon/calcium and carbon/oxygen inelastic gamma ray counts

ratios are also logged as a function of borehole depth. Low hydrogen content of the formations may be stimated by detecting a high count rate in each of the four energy windows and then by comparing the Si/Ca and C/O ratios in these re-



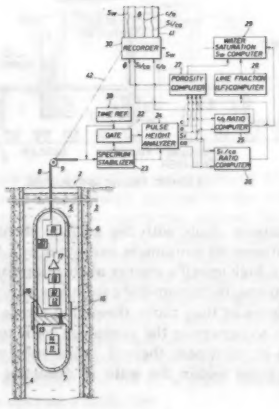
gions to the Si/Ca and C/O ratios for a known water sand, the relative abundance of limestone in the low hydrogen content formations may be estimated thus distinguishing gas zones from water saturated low porosity limestone.

3,780,302

PULSED NEUTRON LOGGING SYSTEM

Dan M. Arnold; Ward E. Schultz, and Harry D. Smith, Jr., all of Houston, Tex., assignors to Texaco Inc., Houston, Tex.

Filed Sept. 20, 1971, Ser. No. 182,035
Int. Cl. G01t 1/16
U.S. Cl. 250—301 **19 Claims**



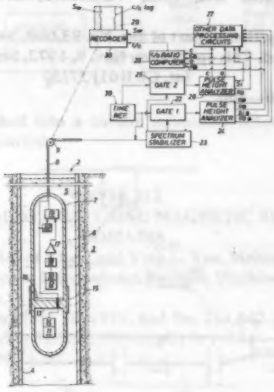
An illustrative embodiment of the invention includes improved nuclear well logging methods and apparatus for investigating subsurface earth formations. A pulsed neutron generator is used to irradiate the earth formations and the gamma rays caused by the inelastically scattered neutrons are observed in four energy windows. The carbon/oxygen ratio and the silicon/calcium ratio and the counting rate in each window are obtained and used to resolve ambiguities in the oil/water content of the formations by appropriately combining the measurements to obtain the lime factor or fraction and the water saturation S_w of the formations, which quantities are then recorded as a function of the borehole depth.

3,780,303

PULSED NEUTRON LOGGING WITH BACKGROUND COMPENSATION

Harry D. Smith, Jr.; Dan M. Arnold, and Ward E. Schultz, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 182,037
Int. Cl. G01t 1/16
U.S. Cl. 250—301 **12 Claims**



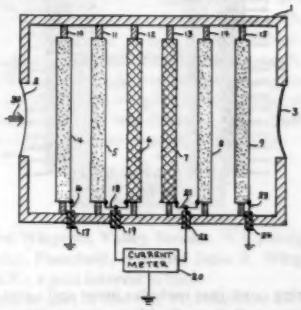
An illustrative embodiment of the present invention includes method and apparatus for improved pulsed neutron logging. The use of very high repetitive rates in pulsed neutron logging using the inelastic gamma ray energy spectrum leads to lingering thermal neutrons from previous high energy neutron pulses. By gating pulses produced by the thermal background pupulation through the same energy windows chosen for observation in the primary logging function just prior to beginning a neutron pulse, storing the counts, and subtracting the counts from those occurring during the neutron pulse in the energy windows of interest, an improved, compensated, inelastic nuetron interaction log may be provided.

3,780,304

CHARGE ACCUMULATION GAMMA RADIATION DETECTOR

Arthur R. Frederickson, Red Acre Rd., Stow, Mass., and Arnold D. Morris, 456 Grove St., Braintree, Mass.

Filed Jan. 28, 1972, Ser. No. 221,666
Int. Cl. G01t 1/16
U.S. Cl. 250—336 **10 Claims**



A gamma ray detector is provided which utilizes the charge accumulation at interfaces effect to measure γ-ray intensities. The detector includes a multiplicity of electrically conductive plates mounted in a vacuum chamber. All the plates are sub-

stantially parallel to each other. The gamma beam passes successively through all the plates. An electrical current flowing between the inner plates is a measure of the γ-beam intensity.

3,780,305

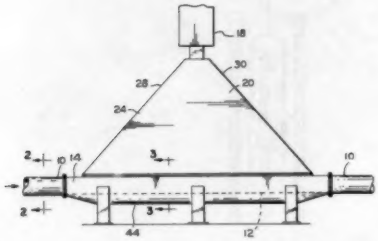
APPARATUS FOR TREATING WOOD CHIPS WITH ELECTRONS

David Free, West Vancouver, Canada, assignor to Radiation Development Co., Ltd., Vancouver, British Columbia, Canada

Continuation-in-part of Ser. No. 93,060, Nov. 27, 1970, abandoned. This application Nov. 9, 1972, Ser. No. 305,073

Int. Cl. H01j *37/30*

U.S. Cl. 250—400 **7 Claims**



Apparatus for irradiating wood chips with electrons includes electron generator with means to inject electrons into conduit through which chips are pneumatically conveyed.

3,780,306

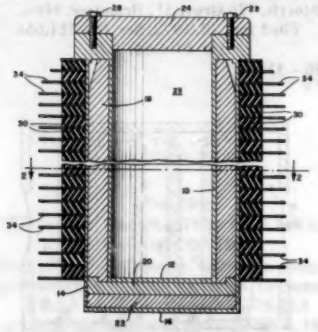
RADIOACTIVE SHIPPING CONTAINER WITH NEUTRON AND GAMMA ABSORBERS

Clifford J. Anderson, Buckeystown, Md., and Reuben W. Peterson, Wilmington, Del., assignors to National Lead Company, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,519

Int. Cl. G21f *1/00*

U.S. Cl. 250—428 **15 Claims**



The shipping container includes inner and outer shell means having gamma radiation shielding means disposed between the shell means. Neutron radiation shielding means is disposed outwardly of the gamma radiation shielding means. Heat conducting means is disposed in engagement with the outer shell means and is interspaced with the neutron radiation shielding means to conduct heat therethrough.

3,780,307

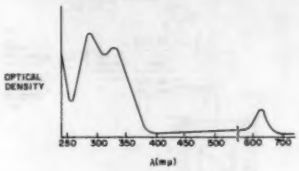
LIQUID CRYSTALLINE COMPOSITIONS HAVING INDUCED OPTICAL ACTIVITY

Franklin D. Saeva, Fairport, and Joseph J. Wysocki, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1971, Ser. No. 191,671

Int. Cl. G02f *1/26*

U.S. Cl. 250—484 **8 Claims**



The electronic transitions of extrinsically optically inactive materials become circularly dichroic when these materials are introduced into an optically negative liquid crystalline environment thereby providing unusual and highly advantageous properties in such compositions. The circularly dichroic optical properties induced in the normally extrinsically optically inactive materials can be utilized for imaging, optical filter and other related applications.

3,780,308

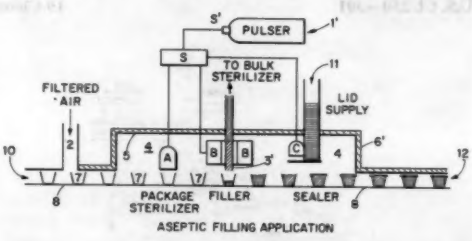
PROCESS AND APPARATUS FOR SURFACE STERILIZATION OF MATERIALS

Sam V. Nablo, Lexington, Mass., assignor to Energy Sciences, Inc., Burlington, Mass.

Filed June 7, 1971, Ser. No. 150,464

Int. Cl. H01j *37/00*

U.S. Cl. 250—492 **17 Claims**



This disclosure deals with the surface sterilization and/or surface treatment of containers and other articles the walls of which have a high specific energy absorption for relatively low energy electrons, by transmitting such low energy electrons to such containers as they move through a sterile gaseous zone, only slightly to penetrate the container walls to effect surface sterilization or treatment thereof, while substantially absorbing the electrons within the walls to minimize X-ray generation.

3,780,309

INSULATED CONTAINER FOR RADIOACTIVE AND LIKE SUBSTANCES

Camille Bochard, Lyon (Rhone), France, assignor to Robatel S.L.P.I., Geneve (Rhone), France

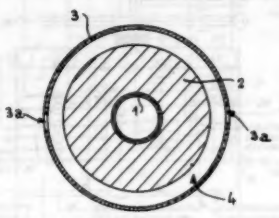
Filed July 28, 1970, Ser. No. 59,037

Int. Cl. G21f *1/00*

U.S. Cl. 250—507 **7 Claims**

A double-walled container for radioactive material having an outer metal casing and an inner wall of lead and, in the space between the walls, an insulating material which is a solid mass of a mixture of hydrated alumina and hydrated iron ox-

ide. The solid mass of insulating material may be formed in the space by pouring a mixture of an aqueous suspension of alumina trihydrate and particulate mild steel or iron into the



space and allowing the mixture to set. The insulating material is effective in removing heat from the lead shield and in preventing heat reaching the lead shield from a source external of the container.

3,780,310

APPARATUS FOR DETECTING UNPREPARED POSTAGE STAMPS

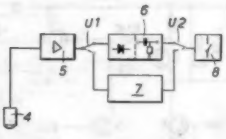
Heinz Hudler, Ketzergasse 389, Vienna, Austria

Filed Mar. 21, 1972, Ser. No. 236,619

Claims priority, application Austria, Mar. 30, 1971, A 2691/71

Int. Cl. G01n *21/30*

U.S. Cl. 250—555 **10 Claims**



There is disclosed an optical arrangement for detecting regular, non-specially-prepared postage stamps for machines which accordingly face or orient the articles for automatic sorting. Detection is limited to the serrated edges common to all existing stamps, which serrations may easily be made into a code. A light source is arranged to impinge radiation at an acute angle relative to the direction of document travel. Thereby the sides of the serrations parallel to this direction are highly illuminated. A photoelectric sensor receives the train of light pulses emitted by the sides of the stamp serrations, which are fed to an amplifier and on to a pulse counting circuit, which serves to operate a deflector.

3,780,311

BREATH ALCOHOL DETECTOR AND AUTOMOTIVE IGNITION INTERLOCK EMPLOYING SAME

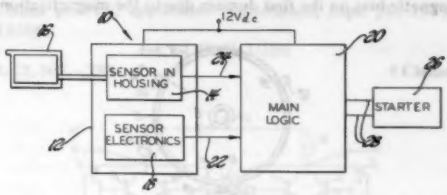
Verne R. Brown, Ann Arbor, Mich., assignor to Environmental Metrology Corporation, Ann Arbor, Mich.

Filed June 14, 1972, Ser. No. 262,852

Int. Cl. H01h *35/00*

U.S. Cl. 307—10 R **16 Claims**

A breath alcohol detector in an automotive ignition system interlock such that an operator cannot start the automobile engine until he has passed a breath alcohol test. A solid state, fast acting sensor is employed in a special housing together with circuitry for requiring a breath sample of at least five seconds. A dual mode system is also disclosed whereby the



sensor is switched into a carbon monoxide detection mode after engine is started.

3,780,312

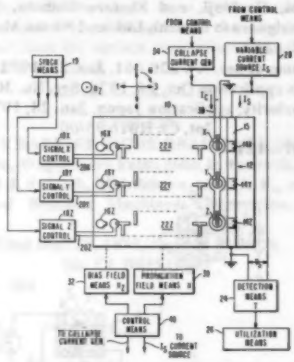
THRESHOLD LOGIC USING MAGNETIC BUBBLE DOMAINS

Yeong S. Lin, Mount Kisco, and Ying L. Yao, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,147

Int. Cl. H03k *19/168*; G11c *11/14*

U.S. Cl. 307—88 LC **28 Claims**



A threshold logic device is provided using magnetic bubble domains. The presence and absence of bubble domains are the logic inputs to the device and the logic gate itself is comprised of a plurality of series connected sensing elements. Magnetoresistive sensing devices are particularly suitable. Each sensing element is given a particular geometry or thickness in order to achieve weighting of the logic inputs. The threshold of the device is internal in an associated detector and can be varied by changing the measuring current through the sensing elements in the case of magnetoresistive sensing elements. Depending on the sum of the weighted inputs being at least equal to the threshold value, or less than this value, the binary output of the device will be one or zero, respectively.

3,780,313

PULSE GENERATOR

John Richard Wiegand, Valley Stream, N.Y., assignor to Milton Velinsky, Plainfield, N.J. and John R. Wiegand, Valley Stream, N.Y.; a part interest to each

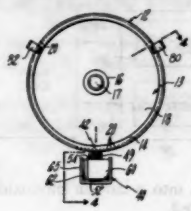
Continuation-in-part of Ser. No. 91,066, Nov. 19, 1970. This application June 23, 1972, Ser. No. 265,681

Int. Cl. H03k *1/00*

U.S. Cl. 307—106 **14 Claims**

A pulse generator to provide a series of pulses through the switching of a magnetic domain in a two domain wire. The generator includes a read-out head having magnets and an in-

ductive pick-up. As the wire from a rotor is moved past the read head, a first magnetic field in the read head switches a first domain in the wire. When the wire is next to the inductive pick-up, the net magnetic field on the wire is minimum and the magnetic bias on the first domain due to the magnetization of



the second domain causes a switching of the second domain and the induction of a pulse in the pick-up coil. A second magnetic field is in opposition to the first magnetic field. The two magnetic fields are so positioned that they substantially cancel each other out at the area in front of the pick-up thereby determining the location where the second domain switches.

3,780,314

VEHICLE COLLISION DETECTING APPARATUS

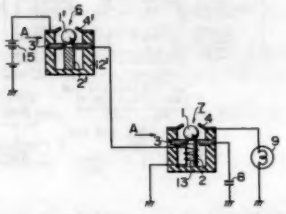
Fumiyuchi Inose, Kokubunji; Tomoji Inui, Katsuta; Sadao Kobayahi, Hachioji, and Shotaro Shibata, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 220,661, Jan. 25, 1972, abandoned. This application Oct. 24, 1972, Ser. No. 300,225

Claims priority, application Japan, Jan. 28, 1971, 46/2976

Int. Cl. H01h *35/00*

U.S. Cl. 307—121 **16 Claims**



A collision detecting apparatus comprising a sphere of magnetic material normally held stationary by the attractive force of a magnet and a switch adapted to be closed when said sphere of magnetic material is moved overcoming said attractive force by virtue of the force of a collision, wherein the attractive force of said magnet tends to be relatively large under the normal driving conditions of a vehicle, while said attractive force is made to be relatively small by a signal indicative of the occurrence of a collison, whereby the apparatus may not be operated by any noise produced while the vehicle is running, but is capable of positively coming into operation upon the occurrence of a collision.

3,780,315

AUTOMATIC CONTROL SYSTEM FOR DISHWASHING APPARATUS

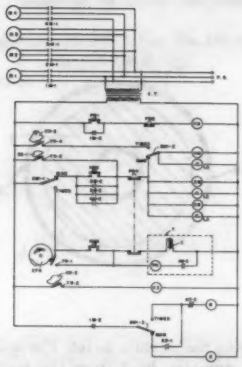
David G. Blakeslee, Western Springs, Ill., assignor to G. S. Blakeslee & Co., Chicago, Ill.

Filed Oct. 26, 1972, Ser. No. 301,063

Int. Cl. H01h *43/10*

U.S. Cl. 307—141 **8 Claims**

A control system for a commercial dishwashing apparatus of the orbital conveyor type having washing and rinsing sections is designed to automatically operate the pump units for the washing and rinsing sections in a timed sequence and operate an electrical signal means to indicate when the soiled ware in the conveyor is cleaned and ready for removal. After



all the soiled ware on the conveyor has been passed through the washing and rinsing sections, the pump units are sequentially stopped and the electrical signal means changes to inform the operator that the automatic operation is terminated.

3,780,316

DATA DISTRIBUTION LINE ARRANGEMENT

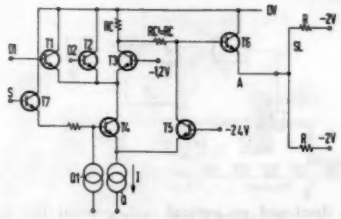
Wilhelm Wihelm, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 17, 1971, Ser. No. 144,074

Claims priority, application Germany, May 26, 1970, P 20 25 740.3

Int. Cl. H03k *17/00*

U.S. Cl. 307—209 **3 Claims**



A data distribution line arrangement with transmitting and receiving gates which are connected to a distribution line wherein the transmitting gates respectively provide data to the distribution line during unique time intervals and a transmitting gate has an output connected to the distribution line. The transmitting gate may be conditioned to three states, two of which states are characterized by a small impedance value and the third state being characterized by a large impedance value.

3,780,317

TRANSISTORIZED COMPARATOR CIRCUIT

Takao Kurata, and Atsushi Oritani, both of Kobe-shi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed July 29, 1971, Ser. No. 167,125

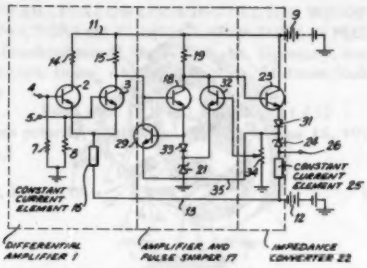
Claims priority, application Japan, July 31, 1970, 45/67184

Int. Cl. H03k *5/20, 5/08, 19/30*

U.S. Cl. 307—235 R **8 Claims**

A comparator circuit comprises a differential amplifier for providing the difference between signals supplied to its inputs. An amplifier and pulse shaper has a transistor connected to the differential amplifier for amplifying and shaping the out-

put signal of the differential amplifier. An impedance converter connected to the output of the amplifier and pulse shaper transistor transmits output signals at low output impedance. A negative feedback path is provided between the



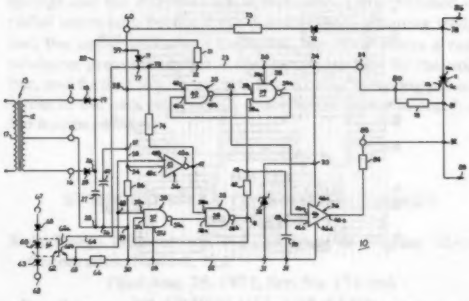
output of the impedance converter and the input of the amplifier and pulse shaper transistor. The negative feedback path is operational when the voltage between its input and output is substantially zero and is non-operational when the voltage between its input and output is different from zero.

3,780,318

ZERO CROSSING SCR FIRING CIRCUIT NETWORK

Everett Wendall Werts, Normal, and Charles Richard Wetter, Bloomington, both of Ill., assignors to General Electric Company, New York, N.Y.

Filed June 26, 1972, Ser. No. 266,233
Int. Cl. H03k 17/72
U.S. Cl. 307—252 UA **5 Claims**



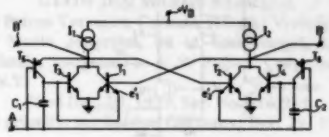
A firing circuit for providing time zero crossing firing of a load-controlling SCR, adapted particularly for firing a load-controlling SCR connected in circuit relationship in a single phase of a multi-phase electrical system, including an electrical power supply, a first quad section integrated circuit means connected in circuit relationship with the power supply and including a first flip flop and a second flip flop, a second dual section integrated circuit means connected in circuit relationship with the first integrated circuit means, a photo isolator to accept a logic input from another logic system and including at least one light emitting diode connected in circuit relationship with the aforesaid logic system and a photo transistor coupled to the light emitting diode and connected in circuit relationship with the first and second integrated circuit means, and a load-controlling SCR connected in circuit relationship with the first and second integrated circuit means such that zero crossing firing of the SCR is provided in accordance with a two step process which is initiated when a logic input is fed to the firing circuit through the photo isolator and regardless of when during the cycle the logic input is supplied.

3,780,319

BISTABLE MULTIVIBRATOR

Arpad Korom, Zurich, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 20, 1972, Ser. No. 290,649
Claims priority, application Netherlands, Sept. 30, 1971, 7113388
Int. Cl. H03k 3/286
U.S. Cl. 307—288 **4 Claims**



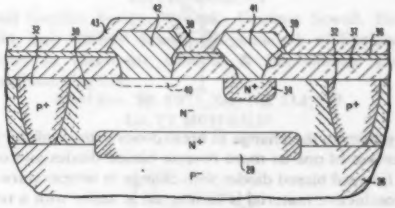
Bistable multivibrator comprising two stages. Each stage comprises a switching transistor and a control transistor the collector emitter paths of which are connected in parallel. The bases and the collectors of the switching transistors of the two stages are cross coupled, and a trigger signal is applied to the bases of the two control transistors via two capacitive elements. The collector base path of each of the two control transistors is shunted by the emitter collector path of an auxiliary transistor of opposite conductivity type the base of which is connected to the trigger input. This provides a highly stable circuit, whilst in addition when the circuit is in integrated circuit form the surface area required for the capacitive elements is a minimum.

3,780,320

SCHOTTKY BARRIER DIODE READ-ONLY MEMORY

Jack A. Dorler, Wappingers Falls; John L. Forneris, Peekskill, and Donald J. Swietek, Middletown, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,976
Int. Cl. H011 19/00
U.S. Cl. 307—303 **7 Claims**

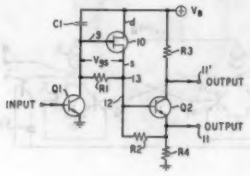


A monolithic Schottky barrier diode read-only memory comprising a semiconductor substrate having more than one separate and distinctly functional integrated circuit means located thereon. A plurality of Schottky barrier diodes comprising a more than one metal system contact the semi-conductor substrate for forming a plurality of Schottky barrier diode junctions. A separate Schottky barrier diode comprising a corresponding more than one metal system is incorporated into the other separate and distinctly functional integrated circuit means for addressing the Schottky barrier diode and sensing information therefrom. Interconnection metallurgy corresponding to the more than one metal system connects the plurality of separate and distinctly functional integrated circuit means and forms a continuous electrical path with the more than one metal system forming the Schottky barrier diodes.

3,780,321
LINEAR DISCHARGE CIRCUIT

Norman Eugene Lentz, North Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 2, 1972, Ser. No. 294,455
Int. Cl. H03k *3/26*
U.S. Cl. 307—304 **4 Claims**



A capacitor is linearly discharged through a series circuit formed by the drain-source path of a field effect transistor and a resistor. Linear discharge is provided by maintaining a fixed voltage across the resistor, and this is accomplished by connecting the gate-source junction of the field effect transistor in parallel with the resistor; the gate-to-source voltage will be constant provided only that the source current is constant and this is assured by means of a constant current generator connected to the field effect transistor source lead.

3,780,322
MINIMIZED TEMPERATURE COEFFICIENT VOLTAGE STANDARD MEANS

Cecil Kent Walters, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 856,646, Sept. 10, 1969, abandoned.
This application July 15, 1971, Ser. No. 165,775
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 307—318 **6 Claims**

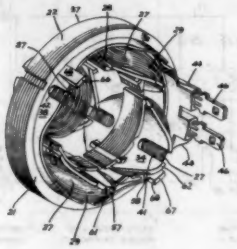
To minimize the change in breakdown voltage of the series connection of one or more reverse biased diodes and one or more forward biased diodes with change in temperature, bulk semiconductive material is connected in series with a reverse biased diode or may be made part of the forward or reverse biased diode, or may be added to the material thereof.

3,780,323
INSULATINGLY COVERED DYNAMOELECTRIC MACHINE

Carl E. Swain, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 15, 1971, Ser. No. 180,757
Int. Cl. H02k *1/04*
U.S. Cl. 310—43 **2 Claims**

Insulation systems as well as winding retaining means for dynamoelectric machines having winding accommodating magnetic cores and methods of making same are described. Ground insulation system may include one or more formed in situ insulation members with portions thereof providing retainer means for constraining windings accommodated by a magnetic core from undesired movement. With tongue shape retainer means, access means may also be provided for facilitating the removal of defective winding turns accommodated on a given core. With formed in situ insulating members, retainer means for terminals and terminal boards may be

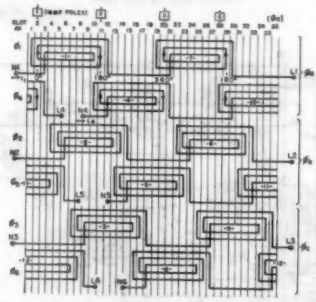


provided along with winding retainer means, by little effort and expense. Similarly, spacer and other means may be provided. In one exemplification, formed in situ insulation system, coupled with molded housing means for winding turns provide substantially improved isolating insulation system for winding turns.

3,780,324
ADJUSTABLE SPEED INDUCTION MOTOR SYSTEM

Jack E. Greenwell, Reno, Nev., assignor to Lear Motors Corporation, Reno, Nev.

Division of Ser. No. 144,897, May 19, 1971. This application June 5, 1972, Ser. No. 259,973
Int. Cl. H02k *3/00*
U.S. Cl. 310—180 **15 Claims**



An electric induction motor/control system providing the desirable high starting torque and wide speed characteristics of direct current motors. The stator of the induction motor has two specially interrelated winding sets per phase. The motor windings are supplied with unidirectional current pulses from silicon controlled rectifiers that are programmed to provide advantageous modes of operation for the motor. The unique relation and interaction between the motor windings hereof and the associated electronic circuitry results in high power factor, good efficiency, and self-clearing SCR commutation action. The preferred motors use a squirrel cage rotor with no commutator, brushes, or slip rings. The complementary stator winding arrangements are not voltage limited, and thereby permit the construction of large power motor systems. Practical motor ratings are from fractional to over 500 horsepower, at speeds ranging from 600 to 40,000 rpm, and higher. With selective control circuitry the motors hereof can be operated: (a) at constant output torque over a wide speed range; (b) at constant horsepower over a selected speed range; (c) with traction output characteristics similar to that of series motors; (d) at constant speed; (e) and with direct speed reversal in any

of these modes. The motor systems require little maintenance, and may be hermetically sealed.

3,780,325

APPARATUS FOR LOCKING STATOR WINDING CONDUCTORS OF TURBOGENERATORS IN POSITION

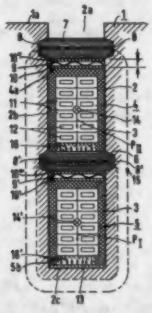
Georg Frankenhauser, Mulheim/Ruhr, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim/Ruhn, Germany

Filed June 12, 1972, Ser. No. 261,652

Claims priority, application Germany, June 18, 1971, P 21 30 201.2

Int. Cl. H02k *3/48*

U.S. Cl. 310—214 3 Claims



Apparatus for locking the stator winding conductors of turbogenerators in position comprises inserts between the upper and lower conductor bars. The inserts are supplemental retaining wedges and associated leaf springs and intermediate components. The supplemental retaining wedges, the leaf springs and the intermediate components are positioned in a radial interspace between the supplemental retaining wedges and the upper surface of the lower bar. This exerts a radial retaining pressure on the lower bar, regardless of the upper bar, and further results in a reduction of the pulsating pressure stress of the bars and permits wider limits for the lowest feasible number of slots.

3,780,326

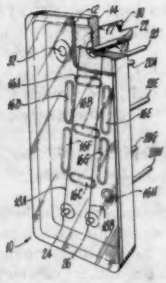
SYMBOL DISPLAY TUBE WITH AUXILIARY ELECTRODE

Rein Raago, Morristown, N.J., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Aug. 25, 1971, Ser. No. 174,666

Int. Cl. H01j *1/72, 1/88, 63/00*

U.S. Cl. 313—108 R 8 Claims



An evacuated envelope having a transparent display face contains a plurality of selectively energizable, phosphor-coated anode display elements for presenting a symbol display, with an auxiliary electrode disposed either behind or coplanar with said display elements and electrically insulated therefrom. A cathode comprising one or more filaments is situated in front of said display elements, i.e., between the display elements and the display face of the envelope, to provide a direct electron beam to the phosphor-coated surfaces of the display elements.

3,780,327

GLOW DISCHARGE STARTER

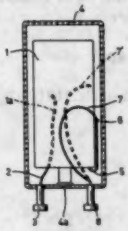
Adrianus Petrus Vervaart; Cornelis Machiel Verhelj, and Hermanus Maria Jongerius, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,911

Claims priority, application Germany, Dec. 29, 1971, G 71 49 219.8

Int. Cl. H01j *1/88*

U.S. Cl. 313—151 2 Claims



The invention relates to a glow discharge starter which is provided with a built-in fuse.

According to the invention the fuse has a resilient contact member exerting a pulling force on the part to be melted and this in a direction which is parallel to the wall of a tubular part of the starter in which the glow discharge is effected. In the case of a starter provided with a tightly fitting synthetic material jacket the fuse described may avoid risk of fire.

3,780,328

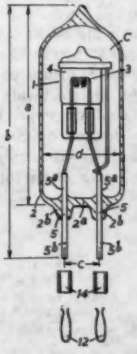
LIGHTING UNIT FOR USE UNDERWATER AND IN WET ENVIRONMENT

Michael Gordon Boddy, Newark; Graham Sewell, Huddersfield, and Michael Sewell, Bingham, all of England, assignors to Electronic Control & Surveillance Limited, Grantham, England

Filed Dec. 30, 1971, Ser. No. 214,239

Int. Cl. H01j *61/30*

U.S. Cl. 313—184 4 Claims



An underwater lighting unit comprises a low voltage tungsten-halogen lamp within an outer envelope of borosilicate

glass, with an evacuated cavity between the two. The envelope is designed to withstand 8,000 p.s.i. in water. Connections are made onto metal pins sheathed in glass sleeves or protrusions integral with the envelope.

The pins are inserted into receptacles embedded in an insulating core within a shell of a free flooding lampholder. Rubber sleeves on the pins are compressed into spaces between the sleeves and the bottoms of recesses in the glass core. There are spring contact clips between the pins and bores in the pin receptacles.

3,780,329

40 WATT FLUORESCENT LAMP

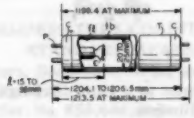
Hitoshi Otsuka, Hirakata; Kazumasa Nohmi, and Masao Hommo, both of Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma City, Osaka Pref., Japan

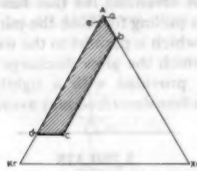
Filed Nov. 7, 1972, Ser. No. 304,418

Claims priority, application Japan, Nov. 12, 1971, 46/106232

Int. Cl. H01j 61/16

U.S. Cl. 313—185 **4 Claims**





Luminous flux and luminous efficiency of a 40 watt fluorescent lamp comprising a ballast specified by the I.E.C. Publication 82 (covering Ballast for fluorescent lamps) is greatly improved by employing an improved tube characterized by:

having the nominal tube length of 1,200 mm and the inner diameter of 20 mm to 25 mm,

provided inside at each end of the tube with an electrode E having the length *l* of 15 mm to 55 mm inward (, from the end face of each cap C as measured as shown in FIG. 2,)

and containing mixed rare gas inside the tube, the rare gas having composition ratio represented by any point within a diagonal region defined by connecting the following points (a) to (e) and (a) with straight lines in the following order, on a trilinear chart for xenon, krypton and argon mixture:

a.	Xe: 1%,	Kr: 0%,	A: 99%
b.	Xe: 15%,	Kr: 0%,	A: 85%
c.	Xe: 15%,	Kr: 65%,	A: 20%
d.	Xe: 0%,	Kr: 80%,	A: 20%
e.	Xe: 0%,	Kr: 5%	A: 95%

the pressure of the mixed gas being between 1.0 mmHg and 3.5 mmHg at the temperature of 20°C.

3,780,330

20 WATT FLUORESCENT LAMP

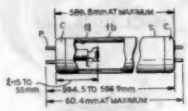
Hitoshi Otsuka, Hirakata; Kazumasa Nohmi, and Masao Hommo, both of Takatsuki City, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma City, Osaka, Japan

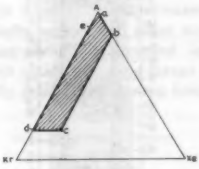
Filed Nov. 7, 1972, Ser. No. 304,419

Claims priority, application Japan, Nov. 12, 1972, 46/106231

Int. Cl. H01j 61/16

U.S. Cl. 313—185 **6 Claims**





Luminous flux and luminous efficiency of a 20 watt fluorescent lamp comprising a ballast specified by the I.E.C. Publication 82 (covering Ballast for fluorescent lamps) is greatly improved by employing an improved tube characterized by:

having a nominal tube length of 590 mm and an inner diameter of 20 mm to 25 mm,

provided inside each end of the tube with an electrode E having a length l of 15 mm to 55 mm inward (from the end face of each cap C as measured as shown in FIG. 2,)

and containing mixed rare gas inside the tube, the rare gas having a composition ratio represented by any point within a diagonal region defined by connecting the following points (*a*) to (*e*) and (*a*) with straight lines in the following order, on a trilinear chart for xenon, krypton and argon mixture:

(a) Xe: 2%,	Kr: 0%,	A:98%
(b) Xe:15%,	Kr: 0%,	A:85%
(c) Xe:15%,	Kr:65%,	A:20%
(d) Xe:0%,	Kr:80%,	A:20%
(e) Xe:0%,	Kr:10%,	A:90%,

the pressure of the mixed gas being between 1.0 mmHg and 3.5 mmHg at a temperature of 20° C.

3,780,331

APPARATUS AND METHOD FOR ELIMINATING MICROCRACKS IN ALUMINA CERAMIC DISCHARGE DEVICES

William J. Knochel, West Orange; Leo C. Werner, Cedar Grove, both of N.J., and Francis C. M. Lin, Flushing, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

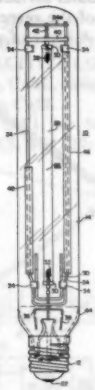
Filed Sept. 22, 1972, Ser. No. 291,489

Int. Cl. H01j 61/06

U.S. Cl. 313—219 **10 Claims**

A ceramic discharge device including an outer vitreous envelope sealed to a metallic base, a pair of lead-in conductors connected to the base and extending into the envelope with one of the lead-in conductors connected to one end of an alumina arc tube mounted within the outer envelope and the other lead-in conductor forming a portion of a support frame for the arc tube and being connected to the other end of the arc tube. The lead-in conductor forming a portion of the support frame being constructed of stainless steel and having a chrome oxide coating formed on its surface. Additionally, a

non-photoelectron emissive element forming a photoelectron collector electrically connected to the first lead-in conductor may be interposed between the arc tube and the second lead-



in conductor forming a portion of the frame and, if desired, the lower portion of the frame may be surrounded by a quartz or ceramic sleeve.

3,780,332

ELECTRON DISCHARGE DEVICES

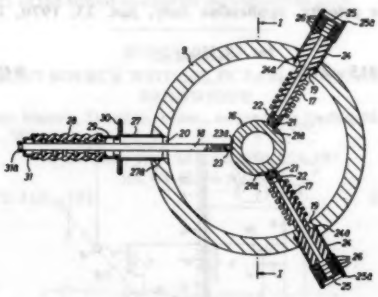
Frederick Henry Gale, Hillingdon, and Roy David Cooper, Boscombe, both of England, assignors to EMI-Varian Limited, Middlesex, England

Filed Apr. 4, 1972, Ser. No. 240,951

Claims priority, application Great Britain, Apr. 14, 1971, 9,399/71; Jan. 10, 1972, 6,221/72

Int. Cl. H01j *1/88, 19/42*

U.S. Cl. 313—252 **5 Claims**



An electron discharge device comprises an evacuated envelope in which a component, such as a focusing electrode, is supported. The envelope is provided with an aperture which is hermetically sealed by a closure member and said closure member is arranged to apply pressure, either directly or indirectly, to the component so as to urge the component against another part of the device. By this means, the component is supported in a desired position within the envelope.

3,780,333

LAMP FILAMENT SUPPORT MEANS

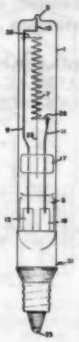
John E. Flynn, Danver, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 15, 1972, Ser. No. 315,539

Int. Cl. H01j *1/96*

U.S. Cl. 313—274 **1 Claim**

A single ended quartz halogen lamp having a coiled coil filament supported and axially aligned by a U-hook arrangement formed in each lead-in wire. The U-hooks are pressed between the coils of the filament to bear against a solid metal spud pro-



vided in each end of the filament. The configuration of the hook is such that the coil of the filament can pass through without being damaged in the process.

3,780,334

VACUUM TUBE FOR GENERATING A WIDE BEAM OF FAST ELECTRONS

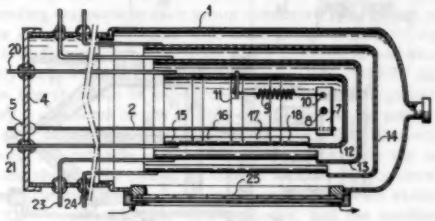
Hubert Leboutet, Paris, France, assignor to Thomson - CSF, Paris, France

Filed May 31, 1972, Ser. No. 258,440

Claims priority, application France, June 9, 1971, 7120938

Int. Cl. H01j *29/46, 33/00*

U.S. Cl. 313—299 **7 Claims**



A vacuum tube for producing a wide high-uniformity beam of fast accelerated electrons. The tube comprises an evacuated enclosure provided with an electron transparent window and containing an elongated cathode, accelerator electrodes and a control electrode formed by sleeves electrically insulated from one another and brought to separately adjustable potentials.

3,780,335

QUARTZ GLASS PINCH SEAL OF INCREASED COMPRESSIVE STRENGTH

Karl Stadler, Rebdorf, Germany, assignor to Patent-Treuhand-Gesellschaft Fur Elektrische Gluhlampen m.b.H., Munich, Germany

Filed June 6, 1972, Ser. No. 260,089

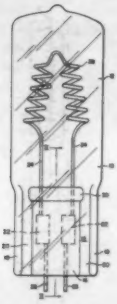
Claims priority, application Germany, June 9, 1971, G 71 22 367.1

Int. Cl. H01j *5/02, 17/16, 61/30*

U.S. Cl. 313—318 **4 Claims**

An electric incandescent lamp of the halogen type including an envelope of quartz glass having an external press seal composed of a flat mid-section limited by two plane parallel faces and two flanges extending parallel to the lamp axis and enclosing the mid-section so that the cross section of the seal in a

plane perpendicular to the lamp axis is of I-shape. The lamp is provided with leads sealed into the press seal in the form of metal foil seals with outer lead wires protruding from the bottom end of the press seal as base contacts and including in the press seal, where it merges with the envelope body, a transverse depression or corrugation extending across substantially the entire width of the press seal.



3,780,336

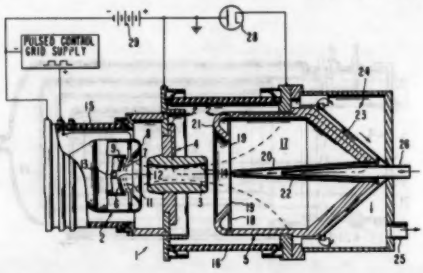
HIGH POWER BEAM TUBE HAVING DEPRESSED POTENTIAL COLLECTOR CONTAINING FIELD-SHAPING PROBE

Robert Henry Giebeler, Sunnyvale, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Aug. 24, 1972, Ser. No. 283,431

Int. Cl. H01j *23/02*

U.S. Cl. 315—5.38 **5 Claims**



An efficient high power beam tube includes a gridded convergent flow electron gun for forming and projecting a beam of electrons through a centrally apertured accelerating anode to a fly-trap type depressed beam collector structure. A tapered conductive probe is axially disposed within the beam collector for cooperation with a collector focus electrode structure to shape the equipotentials at the mouth of the fly-trap beam collector, in the presence of space charge depression within the collector, such as to retain laminar electron flow and uniform current density transversely across the beam as the beam decelerates and expands into the beam collector structure, whereby increased depressed collector efficiency is obtained.

3,780,337

FIELD-EFFECT STORAGE TUBE WITH EAS-DISCHARGE OUTPUT

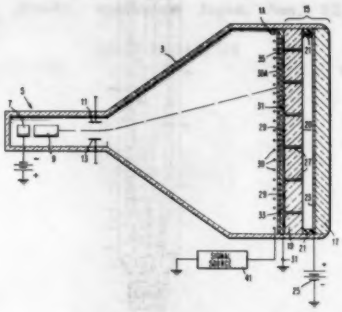
Benjamin Kazan, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1972, Ser. No. 265,018

Int. Cl. H01j *29/41*

U.S. Cl. 315—12 **15 Claims**

A field-effect storage cathode ray tube is provided with a gas-discharge panel arrangement for display output. A transparent conductive mesh is mounted within the panel adjacent the transparent front plate thereof, and an array of conductive pins extend through the panel backplate from within the panel to the other surface of the backplate. A conductive mesh pattern is formed upon the outer surface of the panel backplate in a manner so that each of the respective mesh openings surround a respective pin. A layer of semiconductor material is deposited over the mesh and the backplate exposed by the mesh openings, and a layer of insulation is deposited upon the layer of semiconductor. A charge pattern written on the layer of insulation acts to increase local conductivity in the semiconductor, causing increased current flow between local pins and adjacent mesh. Current flow through the pins determines a pattern of light emission corresponding to the charge pattern.



3,780,338

DEFLECTION SYSTEM FOR COLOR-TELEVISION TUBE

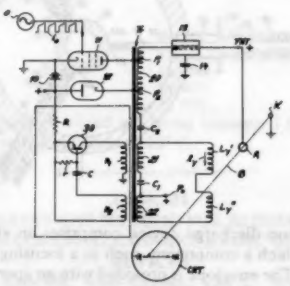
Jacques Bernard, Noisy le Sec, France, and Franco Gatti, Pavia, Italy, assignors to Ates Componenti Elettronici S.p.A., Milano, Italy

Filed Jan. 25, 1971, Ser. No. 109,112

Claims priority, application Italy, Jan. 23, 1970, 19713 A/70

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 R **9 Claims**



The beam of a cathode-ray tube, especially in a color-television system, is horizontally deflected by a sawtooth-current generator which comprises an autotransformer winding on a common core with four further windings, two of these windings being also capacitively coupled to the autotransformer winding and forming, together with an interposed condenser, part of a reactive loop including the coils of an electromagnetic yoke. The autotransformer winding is intermittently energized by an electronic switch, consisting of a pentode and a diode, in series with a portion of that winding across a source of direct current and feeds a rectifier for supplying a high positive potential to an accelerating anode of the associated cathode-ray tube. The two remaining windings are respectively inserted in the input circuit and in the output cir-

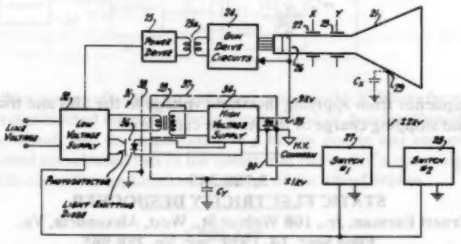
cuit of a normally blocked transistor which is unblocked during the flyback stroke to deliver additional energy to the circuit reactances for utilization during the next scan.

3,780,339

HIGH SPEED SWITCHING CIRCUIT FOR DRIVING A CAPACITIVE LOAD

Alfred J. Mayle, Palo Alto, Calif., assignor to Computer Power Systems, Inc., Sunnyvale, Calif.

Filed May 3, 1971, Ser. No. 139,775
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **7 Claims**



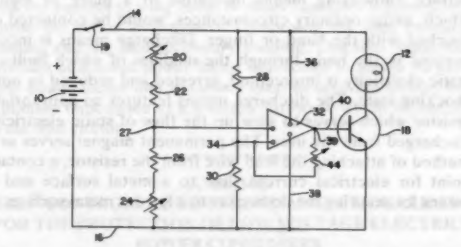
A high speed switching circuit especially useful for driving a capacitive load includes two dc voltage sources of equal magnitude which are selectively coupled to a capacitive load such as a multicolor cathode ray display tube. The polarity of voltage on the capacitive load is switched positive to negative and vice versa by coupling the capacitive load to an inductor and allowing the subsequent transfer of energy to switch the polarity of the stored voltage on the capacitive load.

3,780,340

LIGHT SOURCE WITH SELECTABLE INTENSITY BANDWIDTH

William Munro, Taunton, Mass., assignor to Analog Monitors, Inc., Winthrop, Mass.

Filed June 18, 1971, Ser. No. 154,297
Int. Cl. H05b *39/04*
U.S. Cl. 315—151 **4 Claims**



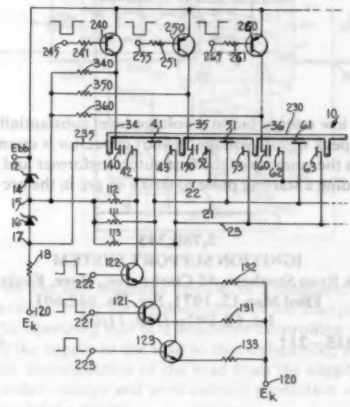
A light source having a selectable intensity bandwith comprising a lamp, a photosensitive element responsive to the lamp, switching means responsive to the photosensitive element for energizing the lamp below a first selected intensity and for de-energizing the lamp above a second selected intensity, the first and second selected intensities defining the intensity bandwith.

3,780,341

CIRCUIT FOR OPERATING MULTIPLE POSITION DISPLAY DEVICES

George Ernest Holz, North Plainfield, and Felix Dieterman, Piscataway, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 85,662, Oct. 30, 1970, abandoned.
This application Feb. 13, 1973, Ser. No. 332,162
Int. Cl. H05b *43/00*
U.S. Cl. 315—169 TV **20 Claims**



The circuit of the invention is adapted for operating multiple-position display devices having several groups of display cathode segments or elements positioned in a row, with corresponding segments in each group connected in common, an anode electrode associated with each group of display segments, and an auxiliary electrode being common to and electrically isolating the groups of segments. The cathode segments, together with an anode, can be selectively energized to display a character at any desired cathode group or position and the auxiliary electrode inhibits electrical discharge between the cathode segments and any other than the associated anode. The circuit includes a separate driver circuit for each cathode and for each anode and a circuit for biasing the "OFF" cathodes, the "OFF" anodes, and the auxiliary screen electrode a predetermined difference in potential from the anode supply voltage and independent of the amount of current conducted by the cathodes or by the auxiliary electrode itself.

3,780,342

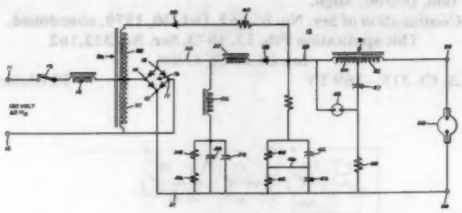
BALLAST APPARATUS FOR STARTING AND OPERATING ARC LAMPS

Norman C. Grimshaw, and Thomas G. West, both of Fort Wayne, Ind., assignors to General Electric Company, Indianapolis, Ind.

Filed Mar. 1, 1972, Ser. No. 230,766
Int. Cl. H05b *37/00*
U.S. Cl. 315—173 **9 Claims**

Ballast apparatus for starting and operating arc lamps includes a full wave rectifier having its input connected in series with a ballasting reactor across the terminals of an alternating current supply. A filter circuit is connected across the output of the full wave rectifier so that a filtered D.C. voltage equal to the peak supply voltage appears at the output of the rectifier bridge. A lamp supply circuit, connecting the bridge output with input terminals for connection to the arc lamp, includes a series connection of a choke coil and a first autotransformer. A second autotransformer has its primary connected in series with the ballasting reactor across the A.C. supply terminals and its secondary connected to the lamp supply circuit

between the choke coil and the first autotransformer. A value low capacitance is connected across the lamp supply circuit at the junction between the choke coil and the first autotransformer and, with the second autotransformer, provides a



signal of low energy but at a voltage level substantially higher than the peak supply voltage. A start capacitor is connected in loop with the primary of the first autotransformer and a switch for providing a starting pulse to strike an arc in the arc lamp.

3,780,343

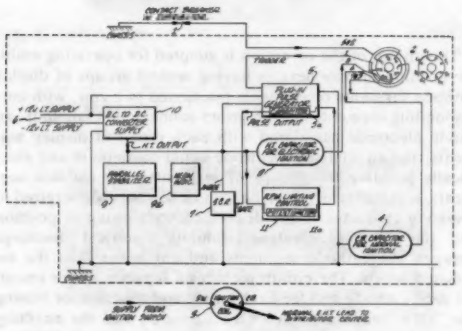
IGNITION SUPPORT SYSTEM

Frederick Ryan Stonham, 45 Clarke Ave., Hove, England

Filed May 12, 1971, Ser. No. 142,601

Int. Cl. F02p *1/00, 11/04*

U.S. Cl. 315—211 **6 Claims**



An ignition control system for a vehicle in which a high voltage capacitor is charged from the vehicle battery through a D.C. to D.C. converter and discharged through the ignition coil upon the firing of a silicon controlled rectifier by a pulse generator controlled by the contact breaker of the vehicle distributor.

3,780,344

CHARGE REGULATING CIRCUIT FOR FLASH LAMP STORAGE CAPACITOR

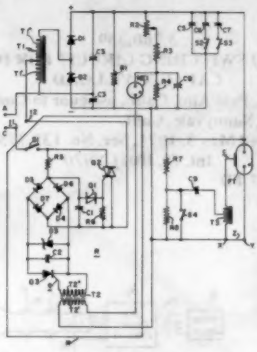
Fredrick W. Paget, Hamilton, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Sept. 7, 1971, Ser. No. 178,066

Int. Cl. H05b *37/00*

U.S. Cl. 315—241 P **13 Claims**

A flash lamp for photographic exposures discharges from one or more high voltage storage capacitors charged from an alternating current source under the control of a charge regulating circuit. The regulating circuit comprises a bridge rectifier charging a regulator capacitor to the threshold voltage of an SBS-triac combination connecting the AC source to a step up transformer whose rectified output charges the flash lamp storage capacitors. A neon lamp sensing the voltage on the storage capacitors is transformer coupled to an SCR which shunts the regulating capacitor preventing the regulating



capacitor from applying threshold voltage to the SBS and triac and stopping charge of the storage capacitors.

3,780,345

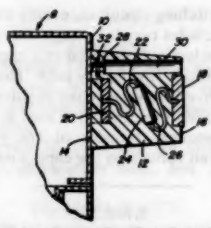
STATIC ELECTRICITY DESHOCKER

Ernest Earman, Jr., 108 Walnut St., West, Alexandria, Va.

Filed Sept. 14, 1972, Ser. No. 288,985

Int. Cl. H05f *3/02*

U.S. Cl. 317—2 R **6 Claims**



A static electricity discharging, arresting and shock eliminating device characterized by a body of any suitable configuration, shape, color and design made of non-conductive and insulative material, plastics for example together with a permanent magnet embedded therein. The body in a preferred embodiment, has an inward end surface designed and adapted to be supportively fastened on a relatively stationary supporting and grounding surface and an outward end surface embodying means indicative of a place or locale which, under ordinary circumstances, would be contacted or touched with the hand or finger. Discharge means is incorporated in the body through the medium of which built-up static electricity is intercepted, arrested and reduced to non-shocking state. The discharge means features an appropriate resistor which serves to slow up the flow of static electricity discharged from the user. The permanent magnet serves as a method of attaching the lead wire from the resistor, a contact point for electrical current flow to a metal surface and a means for securing the deshocker to a ferrous metal surface.

3,780,346

DIGITAL ANTI-SPIN AND ANTI-SLIDE SYSTEM FOR MOVING VEHICLES

Robert G. Gagnon, Ellington, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

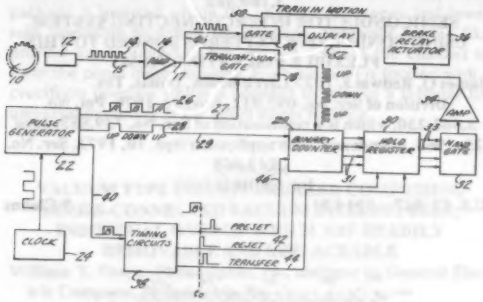
Filed July 3, 1972, Ser. No. 268,231

Int. Cl. G01p *3/42*

U.S. Cl. 317—5 **6 Claims**

A magnetic pickup located in close proximity to a gear mounted on a vehicle wheel or axle produces a series of pulses

indicative of wheel velocity. A binary up/down counter is set to a preselected binary count, and the wheel velocity pulses are alternatively directed to the up and down inputs of the counter for equivalent intervals of time. Any count remaining



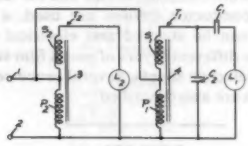
in the counter after the up and down counts which differs from the preselected count indicates acceleration or deceleration of the wheel, and the appearance of a binary one in any one of several preselected bits in the counter at the end of a counting cycle cause the application or release of the wheel brakes.

3,780,347

POWER FACTOR CORRECTION IN A LEAD/LAG BALLAST CIRCUIT

David H. Riesland, Danville, Ill., assignor to General Electric Company, Indianapolis, Ind.

Filed Sept. 27, 1972, Ser. No. 292,555
Int. Cl. H02h 7/04
U.S. Cl. 317—9 PF **5 Claims**



A ballast circuit which comprises an autotransformer and capacitors in a lead/lag circuit arrangement is provided to control current through at least a pair of gaseous discharge lamps. The lead circuit, which comprises a lead primary winding and a lead secondary winding connected to a power capacitor, controls a lead lamp. The lag circuit, which comprises a lag primary winding and a lag secondary winding, controls the current in a lag lamp. A shunt capacitor is connected across the series arrangement comprising the lead primary winding and the lead secondary winding. This shut capacitor provides additional power factor correction to above 90 percent power factor and is further used to tune the circuit for minimum impedance to a selected harmonic which is present in the lead circuit.

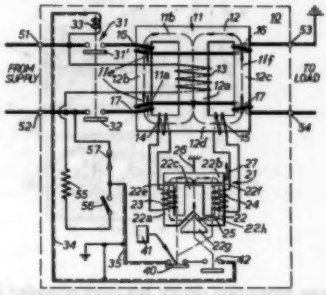
3,780,348

SELF-CONTROLLED DIFFERENTIAL SECTIONALISER FOR THE PROTECTION OF LOW VOLTAGE ELECTRIC POWER CONSUMERS

Panayotis Coroneou Loukidis, Alkminis St. 8 Gallithea, Athens, Greece

Filed July 20, 1972, Ser. No. 273,537
Claims priority, application Greece, July 20, 1971, 42,911; Apr. 22, 1972, 44,765
Int. Cl. H02h 3/28
U.S. Cl. 317—18 D **9 Claims**

A sectionalizer apparatus for disconnecting a load circuit from a supply in response to the occurrence of unbalanced currents in the leads connecting the load to the supply comprises a differential transformer including two magnetic circuits with current primary windings in series with the supply leads and producing zero magnetization when the supply currents are balanced and equally magnetized by a voltage primary winding connected to the supply. Secondary windings on the two magnetic circuits supply respective energizing



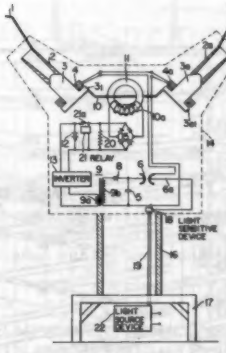
windings on the two magnetic circuits of a magnetic balance device having contact means connected in the energizing circuit for the operating coil of a contactor controlling the connection of the supply to the load so that unbalanced load currents cause disconnection of the load from the supply. Over-voltage, under-voltage and over-current protection may also be provided by the device.

3,780,349

HIGH-TENSION CIRCUIT BREAKER

Yoshio Nitta; Nobuaki Kiyokuni, and Kikuo Kawasaki, all of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Oct. 24, 1972, Ser. No. 300,339
Claims priority, application Japan, Jan. 18, 1972, 47/7148
Int. Cl. H02h 1/00
U.S. Cl. 317—58 **11 Claims**



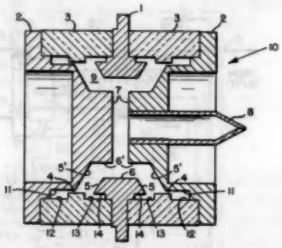
In a high-tension circuit breaker including, in the high-tension side thereof insulated from the ground side by porcelain insulating tubes or the like, a contact mechanism which operates interrupting contacts of the circuit breaker utilizing electric energy stored in a capacitor, there is provided means for charging the capacitor from the high-tension line voltage of the circuit breaker. Various modifications of the charging means are also described.

3,780,350

SURGE ARRESTER

David M. Sanger, Livingston, and Joseph E. Langan, North Caldwell, both of N.J., assignors to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 53,463, July 9, 1970, abandoned. This application Dec. 16, 1971, Ser. No. 208,991
Int. Cl. H02h 3/22
U.S. Cl. 317—61.5 4 Claims



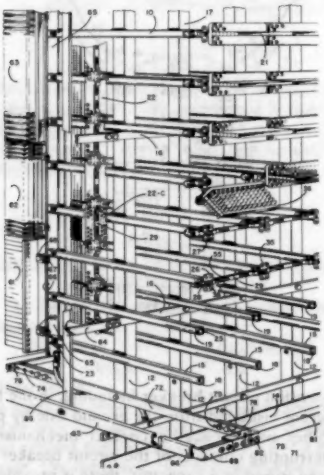
A surge protection device has been provided having a central ground electrode disposed midway between spaced terminal electrodes. The improvement includes a ground electrode having a central annular opening and line terminal electrodes axially disposed at opposite sides of the ground electrode, each line terminal electrode being formed with an annular boss extending partly within the opening of the ground electrode. Means including insulative spacers between electrodes forms an air tight cavity for gas in the vicinity of bosses and the annular opening of the electrodes for discharge of the surges through said cavity.

3,780,351

UNIVERSAL MOUNTING FRAME AND SYSTEM FOR TELEPHONE DISTRIBUTION EQUIPMENT

Garland R. Salmon, and George W. Newton, both of Durham, N.C., assignors to Newton Instrument Company, Durham, N.C.

Filed Dec. 15, 1972, Ser. No. 315,657
Int. Cl. H02b 1/02
U.S. Cl. 317—119 7 Claims



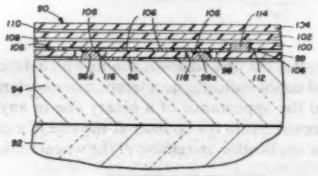
This invention is directed to a mounting frame and to a system of cooperating hardware which is adapted to mount different makes of telephone distribution equipment such as terminal blocks and protectors. Terminal blocks may be mounted in vertical, horizontal, or mixed configurations, and either fixed or with bidirectional pivoting.

3,780,352

SEMICONDUCTOR INTERCONNECTING SYSTEM USING CONDUCTIVE PATTERNS BONDED TO THIN FLEXIBLE INSULATING FILMS

James O. Redwanz, 1027 Larch Brook, Dallas, Tex.

Division of Ser. No. 093,912, Nov. 30, 1970, Pat. No. 3,662,230, which is a continuation of Ser. No. 739,855, June 25, 1968, abandoned. This application Apr. 10, 1972, Ser. No. 242,468
Int. Cl. H01l 5/00
U.S. Cl. 317—101 CM 9 Claims



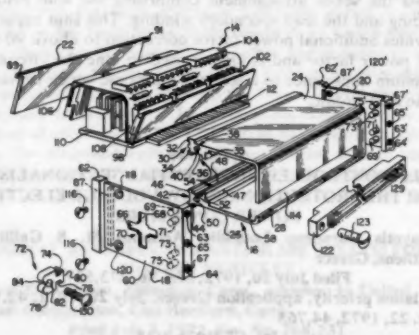
A highly reliable, low cost packaging system for one or more semiconductor chips each having metal contact pads on at least one face. A rigid support is provided for the semiconductor chip and also the large leads which are used to connect the packaged device in an external circuit. A set of thin metallic film strips are bonded to a thin flexible dielectric sheet for support. The set of metal strips interconnects the contact pads on the semiconductor chips and selected leads to electrically interconnect the semiconductor device and the leads. Where a plurality of semiconductor devices are used, a plurality of dielectric sheets can be stacked and electrical connections made between the different layers of metal film strips through openings in the dielectric sheets. Several processes for assembling the packages are also described.

3,780,353

PANEL METER CONSTRUCTION

Bernard M. Gordon, Magnolia; Brant W. Becker, Sudbury, and Charles Prescott, Wilmington, all of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Filed July 5, 1972, Ser. No. 269,031
Int. Cl. H02b 1/62
U.S. Cl. 317—101 DH 8 Claims



A panel meter housing comprises an extrusion of definite length in the form of an open sided channel having integral

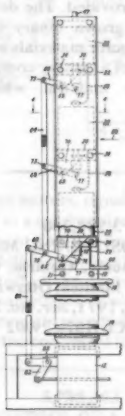
upper, lower and rear walls. An integral rail is provided at the forward margin of the upper and lower walls. The definite length of extrusion is separated from an indefinite length of extrusion, the definite length being slightly longer than the width dimension of a panel meter component package to be mounted within the housing. The panel meter component package is inserted within the channel, the upper and lower rails operating to retain the package. Sidewalls having like profiles are mounted to the opened sides of the channel to form the panel meter housing. Each sidewall is formed with a cruciform opening which is adapted to receive a fastener for universal mounting of the panel meter housing.

3,780,354

VACUUM TYPE CIRCUIT BREAKER COMPRISING SERIES-CONNECTED VACUUM INTERRUPTERS, INDIVIDUAL ONES OF WHICH ARE READILY REMOVABLE AND REPLACEABLE

William T. Sharp, Philadelphia, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Mar. 7, 1972, Ser. No. 232,568
Int. Cl. H02b *1/04*
U.S. Cl. 317—103 **4 Claims**



A vacuum-type circuit breaker comprises a plurality of vacuum circuit interrupters stacked one above the other and electrically connected in series. For mounting the interrupters, a pair of horizontally-spaced, vertically-extending channels of insulating material are provided. Extending horizontally between the webs of the channels are a plurality of interrupter-supporting plates, to which the interrupters are respectively secured. Each of these plates is detachably connected to the webs and, when detached, is removable laterally of the channels from the space between the webs to permit the plate together with its associated interrupter to be removed from the circuit breaker.

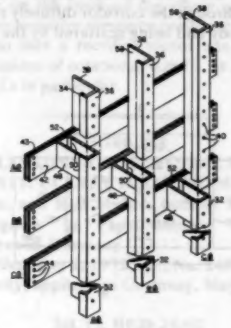
3,780,355

METAL ENCLOSED SWITCHGEAR WITH J-SHAPED VERTICALLY DISPOSED CONDUCTORS

John G. Salvati; Louis N. Ricci, both of Beaver Falls, and Carl R. Merola, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 17, 1973, Ser. No. 324,263
Int. Cl. H02b *1/20*
U.S. Cl. 317—120 **8 Claims**

Each section of a three-phase metal-enclosed switchgear unit is provided with main through horizontal bus and generally J-shaped vertical section bus. The J-shaped vertically extending risers are connected to the horizontal main through bus, and feed circuit breakers or other branch bus circuit controlling devices mounted in the switchgear unit. A



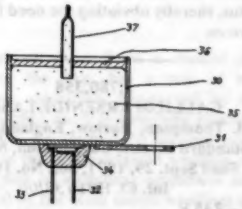
small section of the J-shaped bus is turned around and butt welded to the back of the J-shaped vertical section bus, where a connection to the main through horizontal bus is desired.

3,780,356

COOLING DEVICE FOR SEMICONDUCTOR COMPONENTS

Nikolaus Laing, Hofener Weg, 35–37 7141 Aldingen near Stuttgart, Germany

Continuation of Ser. No. 6,273, Jan. 27, 1970, abandoned.
This application May 10, 1972, Ser. No. 252,081
Claims priority, application Austria, Feb. 3, 1969, 1961691
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **9 Claims**



A device for cooling a semiconductor component comprising a chamber enclosing a non-metallic crystal forming material which experiences a phase change at a temperature which corresponds to the desired operating temperature of the semiconductor component and wherein the material is in thermal communication with the semiconductor component.

3,780,357

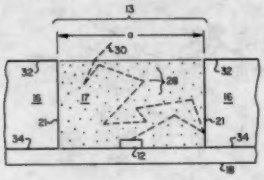
ELECTROLUMINESCENT SEMICONDUCTOR DISPLAY APPARATUS AND METHOD OF FABRICATING THE SAME

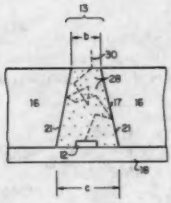
Roland H. Haitz, Portola Valley, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 16, 1973, Ser. No. 333,431
Int. Cl. H05b *33/00*
U.S. Cl. 317—234 R **10 Claims**

This electroluminescent semiconductor display apparatus utilizes a light-emitting semiconductor device surrounded by a molded white plastic body and transparent material containing scattering centers for diffusing the light emitted from the

semiconductor over a large area. The light-emitting device is placed on a base material and a white plastic body is positioned about the device to provide a corridor for light from the device to the upper surface of the body. This pathway is filled with transparent material containing scattering centers, e.g., a mixture of epoxy and glass powder. Light emitted from the device passes up through the corridor diffusely reflecting from the sides of the body and being scattered by the diffusion centers in the transparent material. Thus, at the upper surface of the body, the corridor appears as an essentially uniformly illuminated surface. In the above described manner, a very intense, nearly point source of light emitted from an electroluminescent semiconductor device is diffused to less intense, more uniform illumination over a much larger surface of a display apparatus, thereby obviating the need for large-area light-emitting devices.





3,780,358

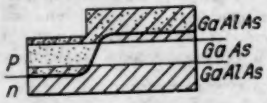
GALLIUM ARSENIDE LASERS

George H. B. Thompson, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,840

Int. Cl. H01b *33/00*

U.S. Cl. 317—235 R **1 Claim**



A semiconductor injection laser device is provided with a narrow junction structure between layers of GaAs and GaAlAs which confines current flow and optical energy to minimize losses. Particular doping and layer growing techniques provide a central strip or ridge in the p-n junction extending between the end faces of the two layers. In one variation the junction crosses an intermediate GaAs layer between two outer GaAlAs layers.

3,780,359

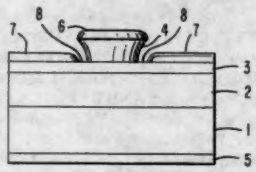
BIPOLAR TRANSISTOR WITH A HETEROJUNCTION EMITTER AND A METHOD FABRICATING THE SAME

William P. Dumke, Chappaqua; Vincent L. Rideout, Mohegan Lake, and Jerry M. Woodall, White Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,620

Int. Cl. H01l *3/20, 9/12*

U.S. Cl. 317—235 R **8 Claims**



An improved heterojunction transistor and a method of fabricating the same is provided. The device is comprised of liquid phase epitaxially grown binary compound layers of group IIIA-VB semiconductor materials which serve as collector and base regions and of a ternary compound layer of group IIIA-VB semiconductor material which serves as the heterojunction emitter.

3,780,360

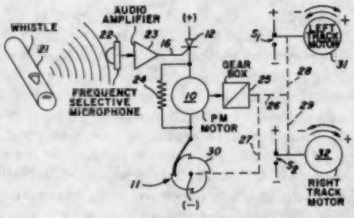
SHAFT POSITIONING MEANS

Leo Bruce Hempell, Almonte, Ontario, Canada, assignor to David Green Associates Limited, Ottawa, Ontario, Canada

Filed Dec. 15, 1971, Ser. No. 208,299

Int. Cl. H02k *29/02*

U.S. Cl. 318—138 **9 Claims**



Means for sequentially positioning a shaft in different angular positions which enables slower operation than a stepping switch, eliminates the need for cam-operated holding contacts and operates on a DC source. An SCR and momentary interrupter are connected in series with a DC motor and battery. A gate signal to the SCR starts the motor rotating which drives the momentary interrupter until the shaft reaches a predetermined angular position at which time the momentary interrupter momentarily opens and closes the circuit so the SCR stops conducting and the motor stops until another pulse is applied to the gate of the SCR. The momentary interrupter comprises a conductive cam on which a contact slides. Drop-off portions on the cam momentarily interrupt the circuit.

3,780,361

CONTROL CIRCUIT FOR AN INVERTER INCLUDING A CONTROLLED THYRISTOR IN AN INTERMEDIATE DIRECT CURRENT CIRCUIT

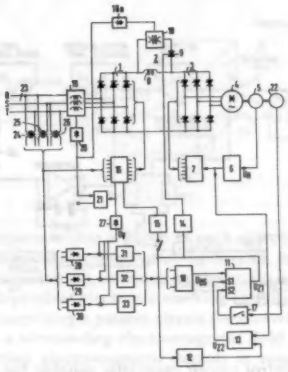
Herbert Poppinger, and Klaus Hubner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 22, 1972, Ser. No. 228,195

Claims priority, application Germany, Mar. 13, 1971, P 21 12 185.7

Int. Cl. H02r *7/62*

U.S. Cl. 318—171 **5 Claims**



In current converter motors, signals dependent on the rotor positions are applied to a synchronized and self-resettable timing circuit arrangement for the timed activation of a controlled thyristor. A shift in the blocking period of the rectifier toward the cycle-cutoff of the controlled inverter is also effected thereby. A mean effective value is additionally applied to the current regulating circuit which is derived from the current flowing through the controlled thyristor.

3,780,362

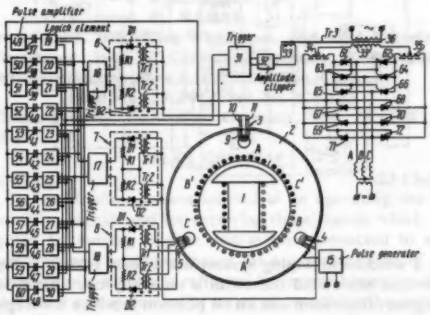
METHOD FOR CONTROL OF A BRUSHLESS MOTOR

Boris Alexandrovich Stromin, ulitsa Sportivnaya, 25, kv. 52, and Boris Konstantinovich Baranov, spusk Gertsena, 11, kv. 26, both of Novocherkassk, U.S.S.R.

Filed Feb. 15, 1972, Ser. No. 226,455

Int. Cl. H02k *29/00*

U.S. Cl. 318—254 **17 Claims**



A method for control of a rectifier motor, which is a combination of a rotating machine and a frequency (and phase) changer, and a device for its realisation, consisting in that the control signals applied to the rectifying element of the frequency changer in phase with the processes taking place in the synchronous machine are derived by sampling the magnetic field of the stator core of the synchronous machine, for which purpose on the back of the stator core there are arranged magneto-sensitive elements connected to a signal comparison unit, so that a rectifier motor can be reliably controlled at low values of rotational e.m.f.s, at zero values of the rotational e.m.f.s in particular.

3,780,363

BRUSHLESS DYNAMO ELECTRIC MACHINE, PARTICULARLY ELECTRIC MOTOR

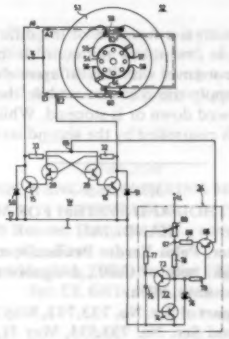
Benno Doemen, and Rolf Muller, both of St. Georgen, Germany, assignors to Papst-Motoren KG, St. Georgen/Schwarzwald, Germany

Filed May 1, 1972, Ser. No. 248,879

Claims priority, application Germany, May 3, 1971, P 21 21 551.0

Int. Cl. H02k *29/00*

U.S. Cl. 318—254 **8 Claims**



An a-c motor structure, such as a shaded pole motor, hysteresis motor or the like, has a pair of main motor windings, which are selectively connected by controllable semi-conductor switches, such as switching transistors, to the supply terminals of a d-c source. To prevent switching currents from flowing in the non-energized winding, and effect a braking torque, a pair of switching amplifiers are provided which are controlled by the main motor windings and, in turn, have only low back current. To provide for rapid starting, the switching amplifiers are energized from the d-c source over a controlled semi-conductor switch, an oscillator controlling the switching rate thereof, the oscillator being voltage-sensitive and increasing in frequency with increasing supply voltage, and being likewise connected to the d-c motor terminal. The motor windings may be wound to be bifilar, tightly coupled inductively by the motor core structure, with diodes bypassing the switching transistors, poled oppositely to the conduction path of the switching transistors.

3,780,364

DUAL-TACH CAPSTAN SPEED CONTROL

Joseph D. Henderson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

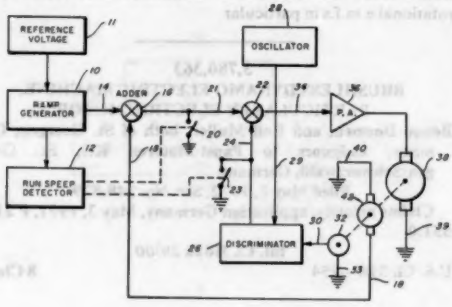
Filed July 6, 1972, Ser. No. 269,511

Int. Cl. H02p *5/16*

U.S. Cl. 318—271 **8 Claims**

This invention describes an improved system for controlling the speed of a capstan which drives magnetic tape in a tape handling system. A d.c. tachometer and a digital tachometer are driven by the capstan motor. A first servo takes as two in-

puts the output of the d.c. tachometer and a ramp voltage (either up or down) and controls the drive motor to follow the ramp voltage. An oscillator and a counter provide pulses at a preselected time interval and the digital tachometer provides pulses at a time interval dependent upon the speed of the drive motor. A second servo utilizes these two inputs to provide an



output voltage which is a function of the difference between the periods of these two pulses and controls the speed of the drive motor in accordance with this difference voltage. Means are provided to apply the d.c. servo while the tape is being speeded up or slowed down or is stopped. While the tape is at running speed, it is controlled by the second servo.

3,780,365

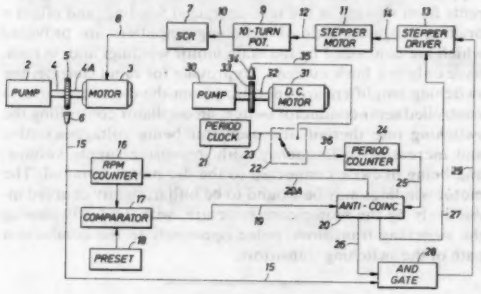
DIGITAL METHOD AND SYSTEM FOR MATERIAL HANDLING

Lawrence C. Porter, Palos Verdes Peninsula, and Kenneth E. Graves, Saratoga, both of Calif., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 733,712, May 31, 1968, Pat. No. 3,590,227 and Ser. No. 733,533, May 31, 1968, Pat. No 3,600,533. This application Nov. 18, 1970, Ser. No. 90,752

Int. Cl. G06g 7/57; H02p 5/00

U.S. Cl. 318—318 **18 Claims**



Methods and apparatus are disclosed for controlling fluid flow in a flow system as a function of the rpm of a pump shaft and as a function of the mass transfer rate of another material. In one form of the invention, a pulse train is established having a frequency indicative of the rpm of the shaft of the pump. This frequency is compared with a preselected frequency, and any difference is translated into a functionally related number of error or correction pulses. The pump motor is provided with a stepper-type adjustment circuit which corrects the rpm of the motor and pump drive shaft in response to, and as a function of, the number of error pulses.

3,780,366

ELECTRIC CONTROL APPARATUS

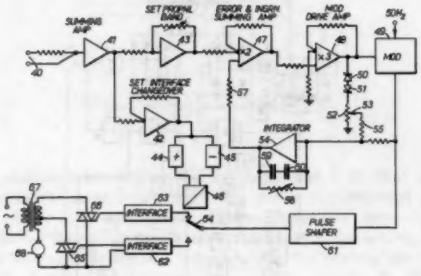
Ian Henderson, Alton, England, assignor to Printed Motors Limited, Hampshire, England

Filed July 19, 1972, Ser. No. 273,293

Claims priority, application Great Britain, July 19, 1971, 33,767/71; Sept. 9, 1971, 42,132/71

Int. Cl. H02p 5/16

U.S. Cl. 318—345 **5 Claims**



A motor control circuit especially suitable for low inertia motors in which the motor is energised by a succession of full power half wave pulses. For speed control the pulses are applied to the motor in forward reverse direction as the speed falls below or above the desired speed.

3,780,367

WINDSCREEN WIPING SYSTEMS FOR ROAD VEHICLES

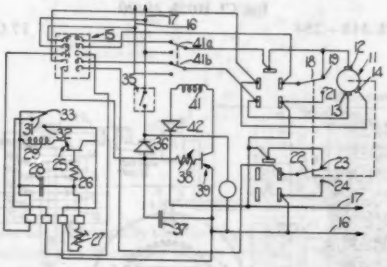
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 18, 1971, Ser. No. 144,613

Claims priority, application Great Britain, June 9, 1970, 27,810/70

Int. Cl. H02p 1/04; B60s 1/08

U.S. Cl. 318—444 **4 Claims**



In a windshield wiping system for a road vehicle a wiper motor has associated therewith a manually operable switch having an off position and an on position in which it energises the wiper motor. The switch has a further position in which it energises the motor so that there is a delay between successive wipes, and movement of the switch to said further position operates means for operating the wiper motor for a number of cycles before the intermittent action commences.

3,780,368

METHOD OF MARKING AND SUBSEQUENTLY LOCALIZING, INDENTIFYING AND RECORDING PHYSICAL OBJECTS

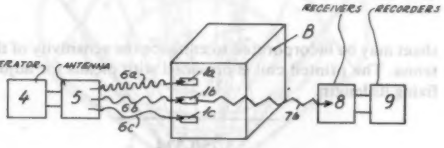
Allan Northeved, Bagsvoerd, and Hans Vinter, Klampenbord, both of Denmark, assignors to Svejsecentralen, Glostrup, Denmark

Filed Feb. 19, 1971, Ser. No. 116,956

Claims priority, application Denmark, Feb. 20, 1970, 857/70

Int. Cl. G01s 9/56; G08b 21/00

U.S. Cl. 343—6.5 SS 1 Claim



Physical objects within a group of such objects are all provided with identical electronic marking devices, each comprising a predetermined set, common to the group as a whole, of mutually independent electronic marking circuits, each marking circuit comprising a passive circuit for receiving electrical energy from a surrounding electromagnetic field and a circuit for transmitting electromagnetic signals in response to the reception of electrical energy in said receiving circuit. Each individual marking circuit is designed to radiate its own characteristic output signals and is selectively tuned only to do so when receiving its own characteristic input signals. Each marking circuit further contains at least one component which is destroyed or changed when the field intensity of the characteristic input signals exceeds a predetermined value. Each individual object is then separately coded by subjecting it to an electromagnetic coding field supplying a characteristic subcombination of input signals specific to the object in question and having a high enough field intensity so that a corresponding subcombination of marking circuits are selectively destroyed or changed. When later subjected to an electromagnetic searching field comprising the total combination of input signals for the common set of marking circuits, individual objects may be identified and recorded by means of the characteristic subcombination of output signals from the remaining, intact marking circuits, which identify the object in question according to a predetermined identification and coding system for the group of objects as a whole.

3,780,369

RADAR

Werner Auer, Heidelberg-Wieblingen, and Olaf Schreiber, Ulm/Donau, both of Germany, assignors to Telefunken Patentverwertungs-G.m.b.H., Ulm/Donau, Germany

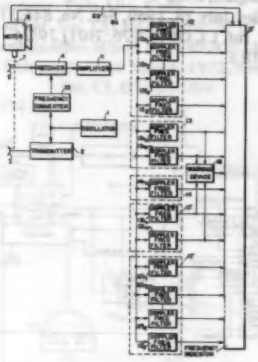
Filed May 25, 1964, Ser. No. 370,125

Claims priority, application Germany, May 25, 1963, T 24054

Int. Cl. G01s 9/44

U.S. Cl. 343—9 23 Claims

1. In combination: means located at an operating site for transmitting signals and for receiving those signals which are reflected by moving targets; and means connected to said transmitting and receiving means for processing those of the received signals which are reflected by targets beginning only at such time as any particular target approaching the operating site first comes to within a predetermined distance of the operating site which predetermined distance is a direct function of the radial speed of the respective target relative to the operating site, in consequence of which signals reflected by targets approaching the operating site at a relatively high speed are first processed when such targets are relatively far away from the operating site whereas signals reflected by targets which are approaching the operating site at a relatively slow speed are first processed while such targets are relatively



close to the operating site, said processing means comprising a plurality of Doppler frequency filters each of which is assigned to a given speed range, said filters being assigned to successively slower speed ranges and having successively wider band widths.

3,780,370

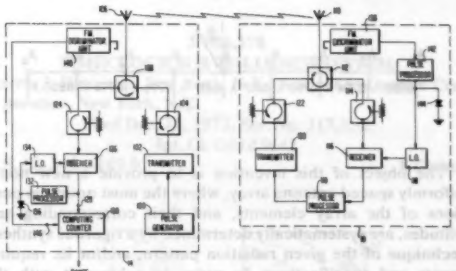
ELECTRONIC RANGE MEASURING METHOD AND APPARATUS

Hewett Maxwell Reeves, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Mar. 11, 1971, Ser. No. 123,227

Int. Cl. G01s 7/40, 9/56

U.S. Cl. 343—17.7 42 Claims

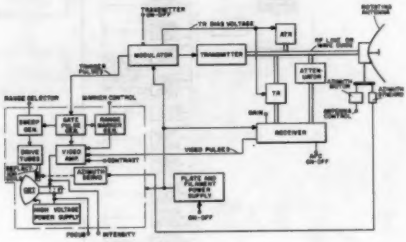


A method and apparatus for electronically providing information as to the distance between two spaced locations, the information being particularly useful for determining and controlling position in offshore operations such as pipeline and cable laying, surveying and other such operations requiring extremely accurate position information. The range information provided by the present invention is extremely accurate since the system dynamically eliminates errors due to unpredictably varying equipment introduced signal delays as well as the relatively fixed signal delays introduced by the equipment. This results in the extremely accurate position information required for offshore operations when the system is utilized to determine the range to two locations from the unknown offshore position so that the unknown position can be determined by conventional trigonometric techniques.

3,780,371
ELECTRONIC COUNTER-COUNTERMEASURES SYSTEM

William H. Rymes, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 28, 1969, Ser. No. 846,310
Int. Cl. G01s 7/26; H01j 29/26
U.S. Cl. 343—18 E 1 Claim



A countermeasure for confusion type electronic countermeasure techniques, when such countermeasures are used to jam radar detection of a relatively stationary target, is disclosed. By use of a two-color two-persistence cathode ray tube display, the target will appear in a color sharply contrasting from the color display of the jamming noise, thereby allowing for an effective determination of target range.

3,780,372
NONUNIFORMLY OPTIMALLY SPACED ANTENNA ARRAY

Hillel Unz, c/o Electrical Engineering Dept. University of Kansas, Lawrence, Kans.

Filed Jan. 17, 1972, Ser. No. 218,495
Int. Cl. H01q 21/00
U.S. Cl. 343—844 6 Claims

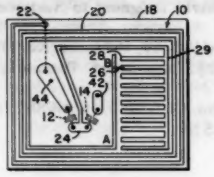
The object of this invention is to provide a new nonuniformly spaced antenna array, where the most optimum positions of the array elements, and their corresponding amplitudes, are systematically determined by a rigorous synthesis technique of the given radiation pattern, and/or its requirements and specifications, in order to achieve it with the minimum possible number of array elements. This new array will be designated the Nonuniformly, Optimally Spaced Antenna Array, or in short, the NOSA Array.

3,780,373
NEAR FIELD SPIRAL ANTENNA

Paul F. G. Holst, and William R. Brobeck, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Nov. 21, 1972, Ser. No. 308,374
Int. Cl. H01q 1/36
U.S. Cl. 343—788 9 Claims

A near field antenna is formed of a coil printed on an insulating board mounted in parallel fixed spaced relationship to its own ground plane. The coil is capacitively shunt tuned and capacitively coupled serially to a coaxial line. A planar ferrite

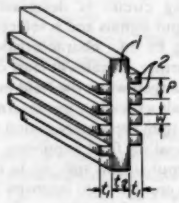


sheet may be incorporated to enhance the sensitivity of the antenna. The printed coil is provided with means for adjustably fixing its length.

3,780,374
RADOME WITH MATCHING LAYERS

Yoshizo Shibano, and Shohachiro Yamashita, Konshana-ku, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 8, 1972, Ser. No. 232,897
Claims priority, application Japan, Mar. 11, 1971, 46/13622
Int. Cl. H01q 1/42
U.S. Cl. 343—872 8 Claims



A radome wall with matching layers wherein a single layer dielectric plate having a dielectric constant of ϵ_r is sandwiched by two dielectric matching layers having the dielectric constant of $\sqrt{\epsilon_r}$. One form of providing the matching layers is with strips of the same dielectric material as the plate. The strips may be spaced in parallel or parallel lattice form with a spacing pitch P between adjacent strips in order to obtain the equivalent dielectric constant of the matching layer $\sqrt{\epsilon_r}$. The thickness of the core is also determined to be an odd multiple of λ/4 in order to obtain broader frequency band characteristics.

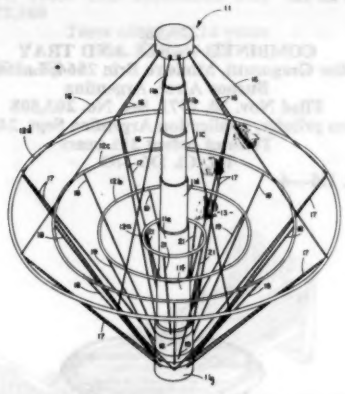
3,780,375
DEPLOYABLE PARABOLIC ANTENNAS

Alan F. Cummings, Downey; Ernest F. Binz, Palos Verdes Estates, and Gene G. Freeman, Santa Ana, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 26, 1971, Ser. No. 202,313
Int. Cl. H01q 15/20
U.S. Cl. 343—915 8 Claims

A deployable parabolic antenna is formed of a plurality of resilient rings disposed concentrically about an extensible boom wherein the outer ring is tied by a first group of tension members to the top of the boom and, also, by a second group of tension members tied to the bottom of the pole, thereby rigidly supporting the outer ring with respect to the pole. The inner rings are tied to the bottom of the pole by respective

groups of tension members and to each other and the outer ring by a net-like metallic fabric member which is stretched to form a concave surface that approaches the shape of a paraboloid when fully deployed. Since the rings are resilient and the fabric and tension members are flexible, the assembly can be folded about the boom to form a compact mass for storage.

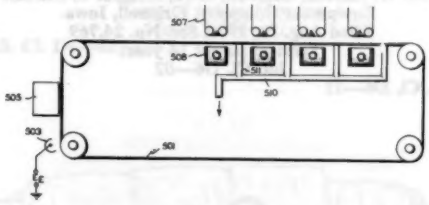


3,780,376

METHOD AND APPARATUS FOR SINGLE AND MULTICOPY CRT COMPUTER PRINT-OUT

Gerald L. Pressman, San Jose, and Thomas D. Kittredge, South San Francisco, both of Calif., assignors to Electroprint, Inc., Palo Alto, Calif.

Division of Ser. No. 776,146, Nov. 15, 1968, Pat. No. 3,647,291. This application July 28, 1971, Ser. No. 167,052
Int. Cl. G03g *15/00*
U.S. Cl. 346—74 CR **11 Claims**



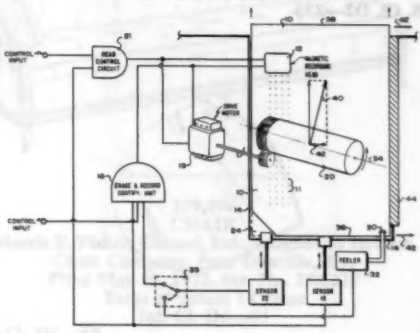
The invention relates to apparatus and methods for constituting or reproducing images through the use of a multilayered screen consisting of an array of apertures from computer information sources. A propulsion field directs charged particles through the screen to a receiving medium preferably spaced at a distance from the screen. Charge distribution on the screen controls the flow of particles through the apertures, some of which are in effect blocked, partially blocked, unblocked, and enhanced, depending on the local charge level. Thus, it is possible to produce patterns of varying tone without contact with the printed or effected substrate. The computer output information may be transferred to the screen optically as from the face of a cathode ray tube or electrically from a direct reading cathode ray tube to establish the charge distribution. The former imaging station utilizes a photoelectric insulative layer overlying a conductive layer for the screen whereas the latter employs a non-light sensitive insulative layer overlying the conductive layer.

3,780,377

MAGNETIC CARD READER-RECORDER APPARATUS WITH PROVISION FOR AVOIDING UNDESIRED ERASURES

Richard B. Osgood, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 137,643, April 26, 1971, abandoned, which is a continuation of Ser. No. 749,078, July 31, 1968, abandoned. This application May 4, 1972, Ser. No. 250,401
Int. Cl. G11b *15/04*
U.S. Cl. 346—74 M **1 Claim**



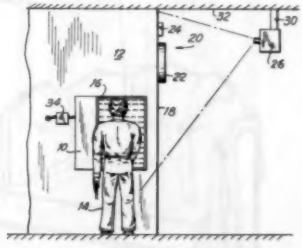
A magnetic card containing important informational data that is to be preserved is physically altered by, for example, clipping one of its corners. This physical change in a card located in the operational position for recording or reading is detected by a sensor, which thereupon disables the recording mechanism to prevent inadvertent obliteration of the important informational data contained on the card. A linear guide fixed with respect to a magnetic recording head aligns the card as the card is driven past the recording head by a cylindrical capstan. This cylindrical capstan is angled slightly with respect to the end edges of the rectangular card in the plane of the card so as to apply a lateral force component to the card and thus hold it against the linear guide.

3,780,378

TIMECLOCK SURVEILLANCE SYSTEM

Harris J. Simonson, New York, N.Y., assignor to Comsec Corporation, New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,132
Int. Cl. G01d *9/42*
U.S. Cl. 346—107 R **8 Claims**



A timeclock surveillance system according to which a camera photographs an individual operating a timeclock while at the same time photographing an indication of the time and date, so that with the resulting photograph it is possible to check that an individual operating a timeclock is the proper individual for the particular card on which the time is punched by the timeclock.

DESIGNS

DECEMBER 18, 1973

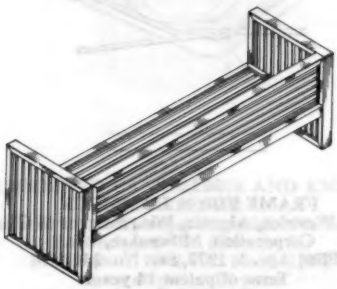
229,587
FACE SHIELD FOR A HELMET
Patrick E. Haggerty, Jr., 5019 Shadywood Lane, Dallas, Tex. 75209
Filed Sept. 3, 1971, Ser. No. 177,925
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

229,588
NECKTIE
Carol A. Lussier, 20 Horta Drive, West Warwick, R.I. 02893
Filed Dec. 10, 1971, Ser. No. 206,978
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—351

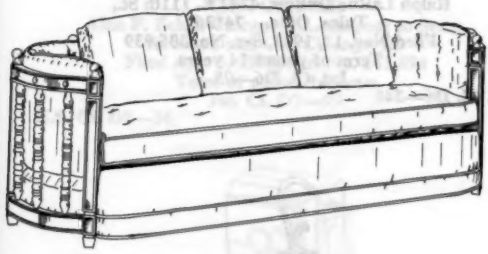
229,589
COMBINED TABLE AND TRAY
Walter Gregorutti, Ministro Brin 2864, Lanus (O), Buenos Aires, Argentina
Filed Nov. 30, 1971, Ser. No. 203,508
Claims priority, application Argentina Sept. 24, 1971
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—4

229,590
CHILD'S SWING SEAT
Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Equipment Company, Grinnell, Iowa
Filed Aug. 31, 1970, Ser. No. 24,769
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—11

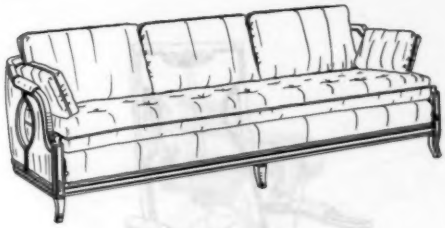
229,591
FURNITURE SEAT
Robert J. Trail, 1402 N. 11th, Tacoma, Wash. 98403, and Spencer T. Wolfe, Gig Harbor, Wash. (7518 Bridgeport Way W., Tacoma, Wash. 98467)
Continuation-in-part of design application Ser. No. 19,872, Oct. 31, 1969. This application July 18, 1972, Ser. No. 272,900
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—60



229,592
SOFA
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,202
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62



229,593
SOFA
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,201
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

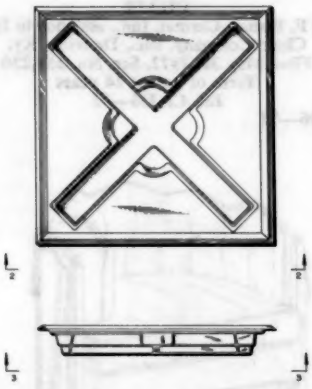


229,594
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,227
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

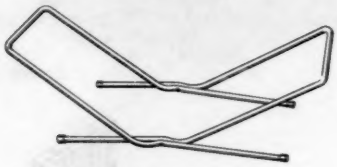
229,595
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,230
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

229,596
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Jackson Chair Company, Inc., Danville, Ky.
Filed May 30, 1972, Ser. No. 258,231
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

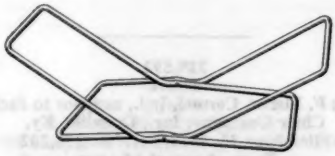
229,597
TREE HOLDER
Patrick H. Wastal, 3842 Catalina St., Los Alamitos, Calif. 90720
Filed May 26, 1971, Ser. No. 147,277
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—105



229,598
FRAME FOR A HAMMOCK
James L. Westrich, Algoma, Wis., assignor to Gleason Corporation, Milwaukee, Wis.
Filed Apr. 3, 1972, Ser. No. 240,892
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198

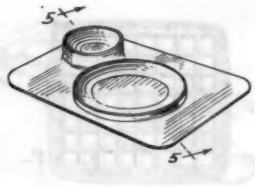


229,599
FRAME FOR A HAMMOCK
James L. Westrich, Algoma, Wis., assignor to Gleason Corporation, Milwaukee, Wis.
Filed Apr. 3, 1972, Ser. No. 240,893
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198

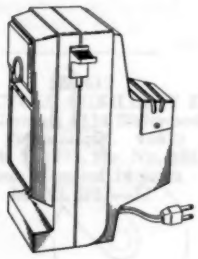


229,600
GARMENT HANGER
Ralph LaRue DuBois, 4242 E. 111th St., Tulsa, Okla. 74136
Filed Nov. 13, 1972, Ser. No. 305,939
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—248

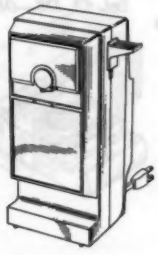
229,601
DISPOSABLE MEAL SERVING UNIT
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.
Filed Mar. 9, 1971, Ser. No. 122,643
Term of patent 1 4years
The portion of the term of the patent subsequent to May 1, 1987, has been disclaimed and dedicated to the Public
Int. Cl. D7—*99*
U.S. Cl. D7—38



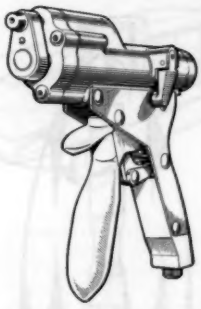
229,602
COMBINED CAN OPENER AND KNIFE SHARPENER
Alan F. Eckel, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 6, 1972, Ser. No. 241,891
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—35



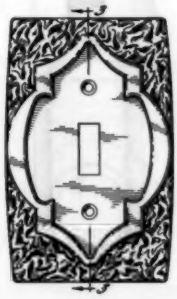
229,603
CAN OPENER
Alan F. Eckel, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 6, 1972, Ser. No. 241,894
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—36



229,604
RIVET GUN
Gabriel M. LaPointe, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.
Filed July 22, 1971, Ser. No. 165,434
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—68



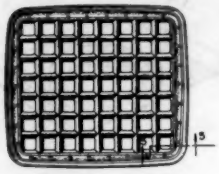
229,605
PLATE HARDWARE
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jan. 10, 1972, Ser. No. 216,871
Term of patent 14 years
Int. Cl. D13—*03;* D8—*99*
U.S. Cl. D8—179



229,606
BOTTLE
Dean H. Buchtel, Canton, Ohio, assignor to Robert C. Dye, Frank L. Buchtel, Harold H. Kehoe, and Edwin W. Oldham, fractional part interest to each
Filed Nov. 29, 1971, Ser. No. 203,127
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60

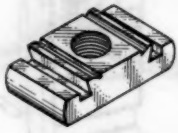
229,607
BOTTLE OR SIMILAR ARTICLE
James Patrick Casey and John Wesley Fine, Jr., Kansas City, Mo., assignors to Ethyl Development Corporation, Kansas City, Mo.
Filed May 24, 1972, Ser. No. 256,624
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—167

229,608
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Dec. 16, 1971, Ser. No. 209,018
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



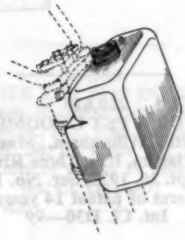
229,609
CASTER
William H. Tacke, Wyoming, Mich., and Frank Fontana, Stratford, Conn., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed June 19, 1972, Ser. No. 264,197
Term of patent 14 years
Int. Cl. D8—*08, 09*
U.S. Cl. D8—226

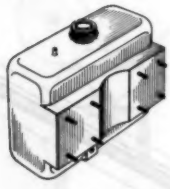
229,610
CLINCH NUT
Katsumi Shinjo, 8, 6-chome, Asahiminamidori, Nishinariku, Osaka, Japan
Filed Sept. 7, 1971, Ser. No. 178,546
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—273



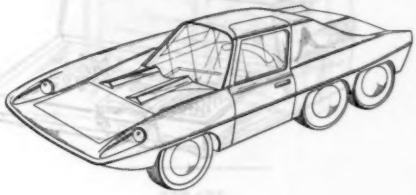
229,611
SAILBOAT HULL
Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, San Juan Capistrano, Calif.
Filed Jan. 24, 1972, Ser. No. 220,542
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70

229,612
MOTORCYCLE AUXILIARY TANK
Ronald L. German, 5131 Blairwood Drive, La Palma, Calif. 90623
Filed Feb. 9, 1973, Ser. No. 331,301
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—155



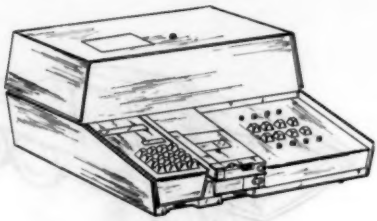


229,613
VEHICLE
Delles T. Davis, Abilene, and Bruce D. Motlong, Midland, Tex., assignors to Research Fuels, Inc.
Continuation-in-part of abandoned design application Ser. No. 24,450, Aug. 12, 1970. This application Nov. 11, 1971, Ser. No. 198,058
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3 G

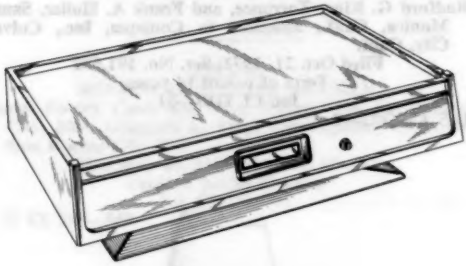


229,614
WATER SOFTENER HOUSING
Radford G. King, Torrance, and Frank A. Holler, Santa Monica, Calif., assignors to Conaqua, Inc., Culver City, Calif.
Filed Oct. 21, 1971, Ser. No. 191,572
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

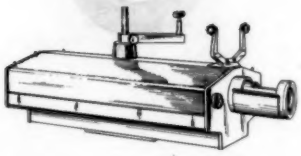
229,615
COMBINED DATA ENTRY AND DISTRIBUTION TERMINAL
George E. Chadima, Jr., 3624 Skylark Lane SE., Cedar Rapids, Iowa 52403
Filed Feb. 4, 1971, Ser. No. 112,838
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



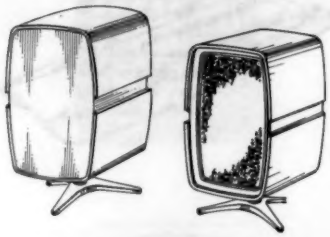
229,616
STEREO SYSTEM HOUSING
Arthur Robson, Jericho, N.Y., assignor to Morse Electro Products Corp., Brooklyn, N.Y.
Filed Aug. 23, 1972, Ser. No. 282,985
Term of patent 14 years
Int. Cl. D14
U.S. Cl. D26—14 B



229,617
HOLOGRAPHIC LASER HOUSING
Eduard Gregor, Pacific Palisades, Calif., assignor to Union Carbide Corporation, New York, N.Y.
Filed Sept. 5, 1972, Ser. No. 286,759
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D26—14 L

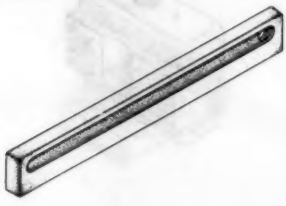


229,618
SPEAKER HOUSING
Makoto Teruachi, Yasunobu Nakamura, Osamu Sugihara, Tadashi Sumino, Kuzuhiro Ueda, and Kiyoshi Suzuki, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 17, 1971, Ser. No. 209,497
Claims priority, application Japan June 18, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G

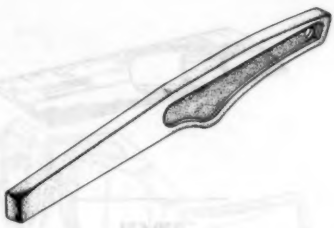


229,619
HANDLE FOR A GROOMING AID FOR PETS
Robert W. Sleith, Wilbraham, Mass., assignor to Suburban Plastics, Inc., Three Rivers, Mass.
Filed Sept. 20, 1971, Ser. No. 182,293
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40

229,620
HANDLE FOR A PET GROOMING COMB
Robert W. Sleith, Wilbraham, Mass., assignor to Suburban Plastics, Inc., Three Rivers, Mass.
Filed Sept. 20, 1971, Ser. No. 182,294
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40

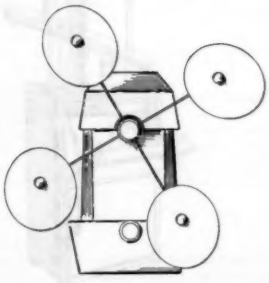


229,621
HANDLE FOR A PET GROOMING COMB
Robert W. Sleith, Wilbraham, Mass., assignor to Suburban Plastics, Inc., Three Rivers, Mass.
Filed Sept. 20, 1971, Ser. No. 182,295
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40

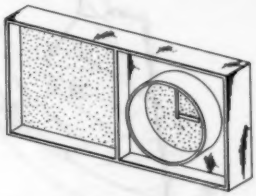


229,622
GOLF CLUB HEAD
Robert S. Bartron, Liss, England, assignor to Robert R. Shaefer, Arlington, Va.
Filed Dec. 10, 1971, Ser. No. 206,984
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GH

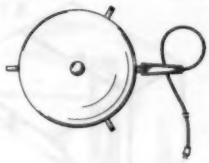
229,623
MOBILE TOY FOR INFANTS
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed Dec. 30, 1971, Ser. No. 214,509
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AP



229,624
CLOCK
Timothy W. Jagemann, 4572 Via Marina, Marina Del Rey, Calif. 90291
Filed May 17, 1972, Ser. No. 254,347
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



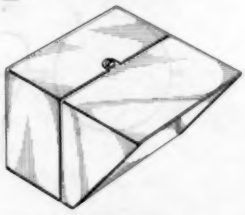
229,625
COOKER
Robert W. Thomas, Wichita, Kans., assignor to William D. Devore and R. A. Devore
Filed Nov. 5, 1971, Ser. No. 196,254
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 F

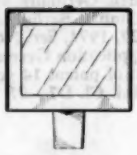


229,626
PLATE OR SIMILAR ARTICLE
Johanna Grams, Bremen, Germany, assignor to Porzellan-Handels-GmbH, Berlin, Germany
Filed July 27, 1971, Ser. No. 166,431
Claims priority, application Germany Feb. 1, 1971
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 F

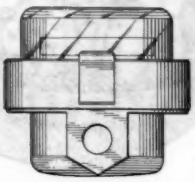
229,627
DESK LAMP
Stephen W. Morris, 1354 Eastshore Drive, Alameda, Calif. 94501
Filed May 24, 1972, Ser. No. 256,629
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F

229,628
LAMP
Neil I. Wolfson, 98 Business St., Boston, Mass. 02136
Filed July 11, 1972, Ser. No. 270,701
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K



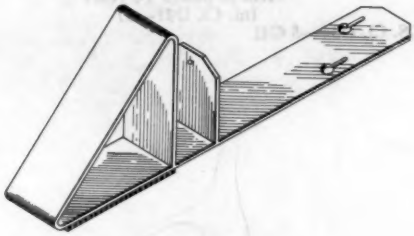


229,629
PRESSURE GAUGE
John Vander Horst, Lakewood, Colo., assignor to Wilkerson Corporation, Englewood, Colo.
Filed June 21, 1971, Ser. No. 155,394
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6

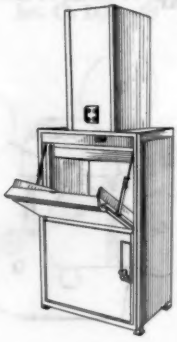


229,630
FINGER-OPERATED INDICATING DEVICE
Sherwin L. Watford, 590 E. Buchtel Ave., Akron, Ohio 44304
Filed Aug. 25, 1972, Ser. No. 283,741
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A

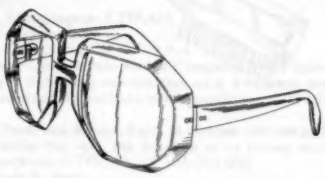
229,631
SHINGLING BRACKET
Russell S. Smith, Alford, Mass. (R.F.D. 3, Great Barrington, Mass. 01230)
Filed Oct. 6, 1971, Ser. No. 187,212
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D54—1 A



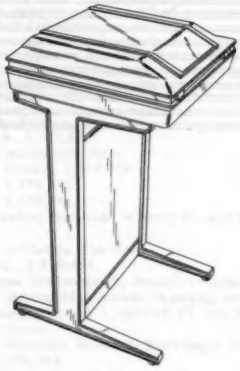
229,632
TRASH AND WASTE COMPACTOR
Ira J. Jackson, Overland Park, Kans., and Leroy D. Williams, Kansas City, Mo., assignors to Trans-World Compacters, Inc., Overland Park, Kans.
Filed Feb. 25, 1972, Ser. No. 229,618
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 B



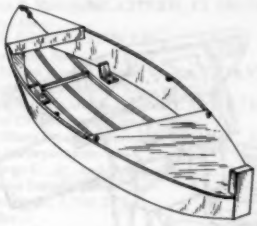
229,633
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Oct. 19, 1972, Ser. No. 298,972
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F



229,634
ELECTRONIC DATA PRINTER
Harold William Bermender, Jr., 38 Ridge Road, Hamden, Conn. 06517
Filed July 1, 1971, Ser. No. 159,091
Term of patent 7 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R

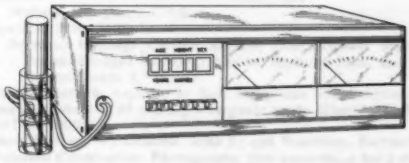


229,635
BOAT
Calvin A. Swilley, Rte. 2, Box 9D, Haynesville, La. 71038
Filed June 16, 1972, Ser. No. 263,619
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q

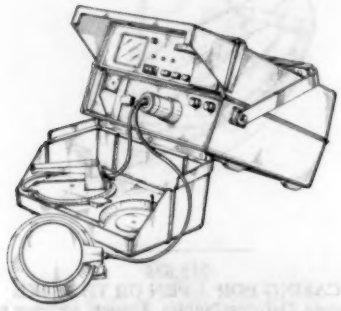


229,636
CASING FOR A PEN OR THE LIKE
Eugene Defores, Nantes, France, assignor to Societe Le Foyer, Paris, France
Filed Nov. 24, 1971, Ser. No. 202,050
Claims priority, application France May 25, 1971
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

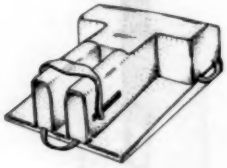
229,637
SPIROMETER
John Y. Pun, Richmond, Calif., assignor to Comprehensive Health Testing Laboratories, Inc., San Francisco, Calif.
Filed Oct. 7, 1971, Ser. No. 187,597
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



229,638
PORTABLE COMBINED HEARTBEAT-MONITOR AND DEFIBRILLATOR UNIT
Harold H. Kawaguchi, Seattle, Wash., assignor to Physio-Control Corporation, Seattle, Wash.
Filed Jan. 29, 1973, Ser. No. 327,657
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F

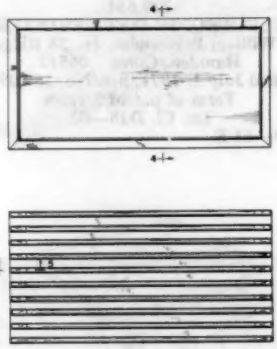


229,639
PATIENT POSITIONING CUSHION
James N. Woog, 3545 Yukon Ave., St. Louis Park, Minn. 55426
Filed Nov. 11, 1971, Ser. No. 198,102
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 H



229,640
FLUID DISPENSING COMB
Jacob Vander Meer, 662 Lake Drive SE., Grand Rapids, Mich. 49503
Filed July 10, 1972, Ser. No. 269,984
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

229,641
SIGNBOARD PANEL
Jesse C. Robertson, Rte. 3, Box 194, Springfield, Oreg. 97477
Filed Aug. 25, 1971, Ser. No. 175,016
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 G



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TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF DECEMBER, 1973

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Acton, Edward M.; Leaffer, Morris A.; and Stone, Herbert, to Sanford Research Institute. Alpha, beta-aldoxime sweeteners. 3,780,194, Cl. 426-342.000.

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Alesi, John A., to Formex Manufacturing, Inc. Apparatus of vacuum forming. 3,779,687, Cl. 425-383.000.

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Altenschopfer, Theodor; Batka, Heimold; Jakobi, Gunter; Krings, Peter; and Lehmann, Hans-Jurgen, to Henkel & Cie G.m.b.H. Process and agents for the clear rinse in mechanical dishwashing. 3,779,934, Cl. 252-142.000.

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Baranov, Boris Konstantinovich: *See—*
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Barcza, Sandor, to Sandoz-Wander, Inc. Silylmethyl thiopseudourea salts. 3,780,175, Cl. 424-184.000.

Bard, John C.; and Maas, Russell H., to Mayer, Oscar, & Company, Inc. Heat-and-serve packages for precooked sausage and the like. 3,780,187, Cl. 426-113.000.

Bard, Melvern O., to Western Auto Supply Company. Store display fixture assembly. 3,779,394, Cl. 211-134.000.

Bardahl, Nils; and Gotz, Friedrich, to Siemens Aktiengesellschaft. Device for limiting the short-circuit energy in electrolytic metal-forming apparatus. 3,779,888, Cl. 204-228.000.

Bardong, Helmut: *See—*
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Bardorff, Wolfgang Muller: *See—*
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Barker, John H.; Dribelbis, Norman C.; and Stevens, Keith B., Sr., to International Business Machines Corporation. Gate mechanism for card reader. 3,779,542, Cl. 271-60.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
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Barnes, Robert Keith: *See—*
Kleigman, Jonathan Morris; and Barnes, Robert Keith, 3,780,087.

Barnes, Thomas Carl; and Knapp, Malcolm Hubert, to General Electric Corporation. Emergency lubrication supply system. 3,779,345, Cl. 184-6.400.

Barriva, Raoul M. Refrigeration booster. 3,779,029, Cl. 62-138.000.

Barry, Claude; and Ratte, Patrice, to Institut de Recherches de la Siderurgie Francaise. Method and apparatus for establishing the firing temperature curve of a sintering charge. 3,779,077, Cl. 73-341.000.

Barson, Clifford Ward, to Dunlop Limited. Tire testing machine. 3,779,073, Cl. 73-146.000.

Bartling, Gerhard; and Schon, Rudolf, to SKF Kugellagerfabriken GmbH. Device for open end spinning. 3,778,990, Cl. 57-58.950.

Bartoo, Otto Floris: *See—*
Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, 3,778,882.

Batka, Heimold: *See—*
Altenschopfer, Theodor; Batka, Heimold; Jakobi, Gunter; Krings, Peter; and Lehmann, Hans-Jurgen, 3,779,934.

Baton-Williams, Raymond Herbert. Automatic control for electrode boilers. 3,780,261, Cl. 219-324.000.

Battersby, Robert J.; and Mucciante, Louis L., to Honeywell Inc. Combination gas valve. 3,779,459, Cl. 236-15.00a.

Battin, Marshall V.; and Stein, Brooks M., to Great Western Sugar Company, The. Method of producing freeze ground brown sugar and product of said method. 3,779,809, Cl. 127-63.000.

Batzer, Hans: *See—*
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Baum, Charles S.: *See—*
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Baum, Charles S., to Permanence Corporation. Tire stud. 3,779,299, Cl. 152-210.000.

Bauman, Jack L., to International Harvester Company. Seed control gate for planters. 3,779,428, Cl. 222-498.000.

Baumann, Dieter: *See—*
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Baxter Laboratories, Inc.: *See—*
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Bayssat, Michel; Fontaine, Louis; and Grand, Marcel, to Lipha Lyonnaise Industrielle Pharmaceutique. Substituted cinnamides. 3,780,102, Cl. 260-558.00r.

Baz, Angel Davila. Mineral mining machines. 3,779,603, Cl. 299-34.000.

Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., to Reynolds, R. J., Tobacco Company. Apparatus and method for manufacturing jet impingement type filters for smoking articles. 3,779,849, Cl. 156-212.000.

Beard, Thomas N., to Shell Oil Company. Method of producing hydrocarbons from an oil shale formation containing nahcolite. 3,779,601, Cl. 299-4.000.

Beard, Thomas N.; and Van Meurs, Peter, to Shell Oil Company. Process for solution mining nahcolite. 3,779,602, Cl. 299-5.000.

Beatty, John W., to General Electric Company. Gas blast circuit breaker of the axial blast type. 3,780,244, Cl. 200-148.00b.

Beaver, Donald V., to All-Steel Inc. Unitary panel leg arrangement for office furniture. 3,779,622, Cl. 312-194.000.

Becker, Arno, to Bruckner Apparatebau GmbH. Apparatus for the wet treatment of a textile web. 3,779,049, Cl. 68-158.000.

Becker, Brant W.: *See—*
Gordon, Bernard M.; Becker, Brant W.; and Prescott, Charles, 3,780,353.

Beckering, Jacobus J.; Weber, Edwin J.; and Secoura, Ralph J., to Black and Decker Manufacturing Company, The. Hand-operated tool with switch actuator having three-position lock-off assembly. 3,780,246, Cl. 200-157.000.

Beckman Instruments, Inc.: *See—*
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Brant, Roy G.; and Shepard, Stephen K., 3,780,238.
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Beddow, Elmer J., to Elec-Tron, Inc. Rotary switch with enlarged shaft journaled in and removable through switch cover. 3,780,245, Cl. 200-155.00r.
Beezer, Earl. Adjustable motion transmitting device. 3,779,089, Cl. 74-53.000.
Behr, Erich: *See—*
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Bemiss, Robert P., to Robalex, Inc. Boilable bakeable package and method. 3,779,447, Cl. 229-14.00b.
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Bendix Corporation, The: *See—*
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Bendror, Jack, to Robbins and Bendror Associates, Inc. Safety device for industrial machines with improved mechanical sensor and associated circuit breaker assembly. 3,780,242, Cl. 200-61.041.
Bene, Pierre Yves. Method of manufacturing a sink comprising a bench and a basin. 3,778,884, Cl. 29-512.000.
Bennett, Richard J.: *See—*
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Benoun, Samuel M.; and David, Roger F., to Align-A-Wrist Company, The. Wrist brace. 3,779,550, Cl. 273-54.00b.
Benson, Carl: *See—*
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Benson, Gustav E.; and Yakuboff, Paul D., to Owens-Corning Fiberglas Corporation. Apparatus for impregnating and coating fibrous strands. 3,779,207, Cl. 118-109.000.
Bercovitz, John H., Jr.: *See—*
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Berger, Abe; and Selin, Terry G., to General Electric Company. Sieve mateates and polysiloaxane mateates. 3,780,080, Cl. 260-448.20b.
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Bernard Golay S.A.: *See—*
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Bernard, Jacques; and Gatti, Franco, to Ates Componenti Electtronici S.p.A. Deflection system for color-television tube. 3,780,338, Cl. 315-23.00r.
Bernard, John E., Jr. Ventilator device. 3,779,149, Cl. 98-2.160.
Berney, Jean-Claude, to Bernard Golay S.A. Variable capacitor for adjusting the frequency of a quartz-crystal clock. 3,778,998, Cl. 58-23.0ao.
Bernstein, Jack: *See—*
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Berolnon, Charles R.; and Kao, James T. F., to Ethyl Corporation. Preparation of phosphonitrilicchloride. 3,780,162, Cl. 423-300.000.
Berquin, Yves; Duval, Pierre; and Alleton, Jean-Claude, to Azote et Produits Chimiques. Process for concentrating solutions. 3,780,161, Cl. 423-310.000.
Bertagni, Jose Juan. Diaphragm for sound transducers, method and apparatus for manufacturing it. 3,779,336, Cl. 181-31.00b.
Berthier, Rene Marie. Installation for controlling the condition of water in concrete structures. 3,778,948, Cl. 52-302.000.
Berthold, Gunter, to Veb Petrolchemisches Kombinat Schwedt. Chromatographic apparatus and method. 3,779,069, Cl. 73-23.100.
Bertin & Cie: *See—*
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Bertin, Jlan Henry, to Bertin & Cie. Multi-cushion and multi-fan system for surface effect machines. 3,779,333, Cl. 180-121.000.
Bertolini, Bollate Natale: *See—*
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Bertoya, Hastings Charles Maxim; Ross, Donald Mackenzie; Brook, Richard Anthony; Allnutt, Anthony John; and Semos, Robert Ernest, to Sira Institute. Method of and an electro-optical system for inspecting material. 3,779,649, Cl. 356-200.000.
Besant, Colin Bowden: *See—*
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Besson, Louis Pierre Albert, to Chabas & Besson S.A. Process and apparatus for calibrating and surfacing tubes. 3,779,064, Cl. 72-283.000.
Best, John S., to Dow Chemical Company, The. Method of making sodium chloride concentrate from sea water. 3,779,030, Cl. 62-58.000.
Bestenreiner, Friedrich; Helmberger, Josef; Muller, Rudolf; and Simm, Walter, to Agfa-Gevaert Aktiengesellschaft. Method and apparatus for making color prints on paper. 3,780,214, Cl. 178-5.20r.
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Padjen, George; Helman, Robert W.; and Brugger, Joseph A., 3,779,056.
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Bethsold, Karl R., to Honeywell Information Systems, Inc. Process of mass soldering electrical components to circuit boards having runs formed from insulated magnet wire. 3,778,883, Cl. 29-495.000.
Betschart, Alois, Jr. Self-releasing ski-binding. 3,779,570, Cl. 280-11.35r.
Betts, Paul J., to Morse, Browne, Company. Laboratory drainboard. 3,779,392, Cl. 211-75.000.
Bieri, Hans: *See—*
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Big Jon, Inc.: *See—*
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Bigelow, John Howard, to Du Pont de Nemours, E. I., and Company. Silver halide emulsion sensitized with a polyhedral haloborane. 3,779,777, Cl. 96-107.000.
Binz, Ernest F.: *See—*
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Biospherics Incorporated: *See—*
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Birch Brothers Inc.: *See—*
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Birke, Gerhard, to Haas, W. Ernst, & Sohn, Firma. Scrubber for removing particulate matter from gaseous fluid. 3,778,982, Cl. 55-290.000.
Bishop, William T., to Hercules Incorporated. Collector composition for ore flotation. 3,779,380, Cl. 209-166.000.
Bisinella, Angelo J.; and Nosek, Roy F., to Pettibone Corporation. Apparatus for lining the walls of metallurgical vessels with prepared refractory material. 3,779,679, Cl. 425-110.000.
Black and Decker Manufacturing Company, The: *See—*
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Black, James A.; and Farwell, Harry Russell, to Black, James A. Printing press and web registry system. 3,779,160, Cl. 101-115.000.
Blackwell, Jennings P., to Phillips Petroleum Company. Solid propellant composition. 3,779,825, Cl. 149-18.000.
Blair, Bruce A., to International Farm Systems, Inc. Incubative animal confinement system. 3,779,210, Cl. 119-18.000.
Blake, David E.: *See—*
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Blakeslee, David G., to Blakeslee, G. S., & Co. Automatic control system for dishwashing apparatus. 3,780,315, Cl. 307-141.000.
Blakeslee, G. S., & Co.: *See—*
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Blanc, Ferdinand H. Jean. Feed dog awl assembly. 3,779,184, Cl. 112-2.000.
Blecken, William E., to Ingersoll-Rand Company. Transferential pin. 3,778,940, Cl. 52-116.000.
Blinn, Harold A.; and Overby, William T., to Goodyear Tire & Rubber Company, The. Process for producing a fatigue resistant tire cord. 3,779,827, Cl. 156-330.000.
Bloching, Helmut: *See—*
Fries, Walter; Bloching, Helmut; Rhld, Hilden; and Jung, Dieter, 3,779,931.
Bloom, Stanely M.; and Garcia, Paulina H., to Polaroid Corporation. Photographic processes and products employing benzindole phthaleins as optical filter agents. 3,779,752, Cl. 96-3.000.
Bloom, Stanley M.; Idelson, Elbert M.; Simon, Myron S.; and Waller, David P., to Polaroid Corporation. Photographic processes and

products employing aminomethyl-substituted phenolic phthaleins as optical filter agents. 3,779,753, Cl. 96-3.000.

Bloomquist, Arnold Eugene: *See—*
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Bluestein, Bernard R.: *See—*
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Bluestein, Claire: *See—*
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Bochard, Camille, to Robatel S.L.P.I. Insulated container for radioactive and like substances. 3,780,309, Cl. 250-507.000.

Bock, Erwin; and Theml, Oskar, to Siemens Aktiengesellschaft. Method of producing magnetic core parts. 3,778,897, Cl. 29-609.000.

Bock, Hartmut, to Kalle Aktiengesellschaft. Device for the production of a measuring signal or control signal. 3,780,299, Cl. 250-209.000.

Bockenstette, Kenneth R., to Vanguard Industries, Inc. Molded plastic fastener. 3,779,374, Cl. 206-56.0df.

Boddy, Michael Gordon; Sewell, Graham; and Sewall, Michael, to Electronic Control & Surveillance Limited. Lighting unit for use underwater and in wet environment. 3,780,328, Cl. 313-184.000.

Bode, Kurt, to Rollei-Werke Franke & Heidecke. Film winding mechanism for motion picture apparatus. 3,779,092, Cl. 74-122.000.

Boeing Company, The: *See—*
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Boggs, Beryl A., to Advex Corporation. Surface driven winder. 3,779,472, Cl. 242-18.0dd.

Boissevain, Matthew G.; and Kahlin, Erik B., to Measurex Corporation. Cable carrier with removable plastic links. 3,779,003, Cl. 59-78.100.

Boll, Dietmar: *See—*
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Bolles, Theodore F., to Minnesota Mining and Manufacturing Company. Capsules and process for forming capsules. 3,779,942, Cl. 252-316.000.

Bolt Associates, Inc.: *See—*
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Bolt, Beranek and Newman, Inc.: *See—*
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Bombardier Limited: *See—*
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Bomberger, Henry A., to Armstrong Cork Company. Flexible, intermediate temperature, mineral wool board. 3,779,862, Cl. 162-152.000.

Bomberger, Howard B., Jr., to RMI Company. Cathode sheet for electrodeposition and method of recovering electrodeposited metals. 3,779,872, Cl. 204-12.000.

Bondi, Herman H. Marble hanger for crypt front. 3,778,942, Cl. 52-134.000.

Boneau, David F., to Phillips Petroleum Company. Production method. 3,779,315, Cl. 166-268.000.

Bongers, H. J.: *See—*
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Bonham, James A.: *See—*
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Boom, Abraham A., to Celanese Corporation. Apparatus for heat treatment of substrates. 3,780,255, Cl. 219-121.00p.

Borg-Warner Corporation: *See—*
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Vanassche, Willy Joseph; Pollet, Robert Joseph; Borginon, Hendrik Alfons; and Pattyn, Herman Alberik, 3,779,776.

Borner, Helmut, to Andreae & Mayer GmbH. Actuating mechanism for vending automats. 3,779,358, Cl. 194-75.000.

Bott, Lawrence L., to Nalco Chemical Company. Secondary recovery of petroleum. 3,779,316, Cl. 166-276.000.

Boudreau, Alban M., to Hedstrom Co. Infant's dressing table securement. 3,779,540, Cl. 269-328.000.

Bourns, Inc.: *See—*
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Bowen, Edward George; and Dick, George Wilmer, to Bell Telephone Laboratories, Incorporated. Multifrequency tune receiver. 3,780,230, Cl. 179-84.0vf.

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Brackmann, Warren A.; and Di Ianni, Daniel, to Rothmans of Pall Mall Canada, Limited. Tobacco stream manufacture. 3,779,252, Cl. 131-84.00b.

Brandenburg, John T.: *See—*
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Brane, Earl P., to Laurtech International Company, mesne. Water softener valve assembly with regeneration capability. 3,779,281, Cl. 137-625.290.

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Brant, Roy G.; and Shepard, Stephen K., to Beckman Instruments, Inc. Multi sectional rotary wafer switch assembly with improved support and terminal connector for thin circuit module. 3,780,238, Cl. 200-11.0da.

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Bressington, Edwin Thomas: *See—*
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Bretschneider, Hermann, to Hoffmann-La Roche Inc. Bicyclic compounds. 3,780,101, Cl. 260-553.00d.

Breyer, Eberhard, to Siemens Aktiengesellschaft. Apparatus for measuring tensile stresses in continuously fed webs of material. 3,779,074, Cl. 73-144.000.

Brianza, Carate: *See—*
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Bridgestone Tire Company Limited: *See—*
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Brion, Jacques, to Commissariat a l'Energie Atomique. Tire incinerator. 3,779,183, Cl. 110-18.00r.

Bristol-Myers Company: *See—*
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Konishi, Masataka; and Tsukiura, Hiroshi, 3,780,018.

British Insulated Callenders Cables Limited: *See—*
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British Oxygen Company Limited, The: *See—*
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British Steel Corporation: *See—*
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Britt, Robert Gordon. Variable explosion-displacement rotary engine. 3,779,216, Cl. 123-8.490.

Brix, John R. Board game apparatus. 3,779,554, Cl. 273-131.00b.

Brobeck, William R.: *See—*
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Broberg, Dewey O., Jr. Engine noise depressing assemblies. 3,779,342, Cl. 181-56.000.

Brockman, William H.; and Greer, Mary H., to Iowa State University Research Foundation, Inc. Micromanipulator system. 3,779,400, Cl. 214-1.0bd.

Broderick, James J.; and Marcus, Seymour A., to Kohnstamm, H., Company, Inc. Flavored oils and food products containing the same. 3,780,184, Cl. 426-65.000.

Broides, Israel. Mat cutting machine. 3,779,119, Cl. 83-581.000.

Brokke, Mervin E., to Stauffer Chemical Company. 2-Thiobenzoxazolyl and 2-thiobenzothiazolyl trifluoro butenyl compounds. 3,780,050, Cl. 260-306.000.

Brook, Richard Anthony: *See—*
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Brown & Williamson Tobacco Corporation: *See—*
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Brown, Larry P.; and Rhoades, Vaughan W., to Cities Service Oil Company. Apparatus for containing highly corrosive materials under pressure. 3,779,421, Cl. 220-63.000.

Brown, Melvin H., to Aluminum Company of America. Method of multiple effect evaporation. 3,779,871, Cl. 203-88.000.

Brown, Verne R., to Environmental Metrology Corporation. Breath alcohol detector and automotive ignition interlock employing same. 3,780,311, Cl. 307-10.00r.

Browning, Vernon D.: *See—*
Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., 3,779,846.

Bruckner Apparatebau GmbH: *See—*
Becker, Arno, 3,779,049.

Bruenner, Rolf S.: *See—*

Stammler, Manfred; Schmidt, Willfred G.; and Bruenner, Rolf S., 3,779,822.

Brugger, Joseph A.: *See—*
Padjen, George; Helman, Robert W.; and Brugger, Joseph A., 3,779,056.

Brummer, Josef, to Heberlein & Co., AG. Twist tube for a false-twist device. 3,778,991, Cl. 57-77.300.

Bruninga, Kenneth J., to Nelson Irrigation Corp- .ation, mesne. Step-by-step rotary sprinkler head with quick-change and color-coded nozzle insert. 3,779,462, Cl. 239-230.000.

Brunko, Wade D., to United States Steel Corporation. Method of producing quenched and tempered hollow steel structural members of polygonal cross section. 3,779,817, Cl. 148-12.400.

Bruno, C., & Son, Inc.: *See—*
Hoey, Fred A., 3,779,126.

Bruson, Herman A.; and Plant, Howard L., to Olin Corporation. Halomethyl substituted derivatives of dihalophenylcyclopropane. 3,780,117, Cl. 260-650.00r.

Bruzzese, Tiberio; and Ferrari, Rodolfo. Partricin methyl ester. 3,780,173, Cl. 424-122.000.

Bryan, James W. Automatic liquid dispenser for flush tanks and the like. 3,778,850, Cl. 4-227.000.

Brzozowski, Zdzislaw; Angielski, Stefan; and Wojcikowski, Czeslaw. 2-Pyrazoline-1-carboxamide sulfonamide derivatives. 3,780,058, Cl. 260-310.00d.

BTR Industries Limited: *See—*
Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, 3,778,882.

Buchbinder, Albert J.: *See—*
Buchbinder, Robert I.; and Buchbinder, Albert J., 3,779,379.

Buchbinder, Robert I.; and Buchbinder, Albert J., to Devco Management, Inc., mesne. Automatic corrugated waste picker. 3,779,379, Cl. 209-102.000.

Buck, Gordon H., to Mattel, Inc. Audible game. 3,779,552, Cl. 273-88.000.

Buckbee Mears Company: *See—*
Johnson, E. Curtis, 3,778,899.

Budge, William W.; and Donald, Malcolm, to Pacific Mariculture, Inc. Oyster growing apparatus and method. 3,779,209, Cl. 119-4.000.

Budzyna, Edward S., to Rockwell International Corporation. Weft carrier guide. 3,779,288, Cl. 139-122.00r.

Buhrmann, Wayne H.; and Fix, Sidney R., to Goodyear Tire & Rubber Company, The. Cooling system including reinforced hose. 3,779,308, Cl. 165-51.000.

Bunger, Heinrich; and Renckhoff, Gustav, to Dynamit Nobel Aktiengesellschaft. Meltable coating compositions, particularly for foodstuffs and pharmaceutical preparations. 3,779,783, Cl. 106-171.000.

Bunker-Ramo Corporation, The: *See—*
Healy, Robert M.; and Hovey, Ralph J., 3,780,247.

Bunten, Theodore M., to Repco Products Corporation. Guide element for baseboard radiation. 3,779,309, Cl. 165-55.000.

Burcher, Ernest E.: *See—*
Keafer, Lloyd S., Jr.; Burcher, Ernest E.; and Kopia, Leonard P., 3,779,788.

Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; Krohn, Hellmut; and Stein, Hermann, to Diamler-Benz Aktiengesellschaft. Device for prevention of spinning of the driven wheels of a motor vehicle. 3,779,331, Cl. 180-82.00r.

Burland, Oliver J. Supporting bar assembly for vehicle. 3,779,436, Cl. 224-42.10g.

Burnand, W. E., & Son Limited: *See—*
Strawson, Kenneth Horace, 3,779,120.

Burnett, William W. Measuring attachment for motor vehicle wheels. 3,779,456, Cl. 235-95.000.

Burroughs Corporation: *See—*
Holz, George Ernest; and Dieterman, Felix, 3,780,341.
Kondur, Nicholas, Jr.; and Kobylarz, Lawrence P., 3,780,264.
Wasielewski, Leonard; and Kinner, James L., 3,779,544.
Wojtowicz, Edward A.; Hunter, James R.; and Lazzarotti, S. James, 3,779,546.

Burstein, Norman; and Ditzler, Richard C., to Smokontrol Corporation of America. Air cleaning apparatus. 3,779,710, Cl. 23-288.00f.

Bushnell, Calvin L.; and Stedman, James K., to United Aircraft Corporation. Matrix-type fuel cell. 3,779,811, Cl. 136-86.00r.

BYK Gulden Lomberg Chemische Fabrik GmbH: *See—*
Klemm, Kurt, 3,780,095.

Byrd, Richard W.: *See—*
Byrd, William R.; and Byrd, Richard W., 3,780,155.

Byrd, William R.; and Byrd, Richard W. Method of assembling a chair back. 3,780,155, Cl. 264-230.000.

Caffiero, Rudolphe: *See—*
Pillon, Daniel; Poignant, Pierre; and Caffiero, Rudolphe, 3,779,738.

Cahn, Robert P.: *See—*
Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., 3,779,907.

Calcagno, Benedetto; Ghirga, Marcello; and Di Fiore, Lucio, to Societa Italiana Resine S.p.A. Process for reactivating an aluminum trichloride catalyst. 3,779,943, Cl. 252-411.00r.

Calcagno, Benedetto; Canavesi, Roberto; and Bertolini, Bollate Natale, to Societa Italiano Resine S.I.R. S.p.A. Process for manufacturing linear alkyl benzenes. 3,780,120, Cl. 260-671.00b.

Calcato, Inc.: *See—*
James, Maurice L., 3,778,962.

Caldwell, John R.: *See—*
Jackson, Winston J.; Kuhbuss, Herbert F.; and Caldwell, John R., 3,780,148.

Caley, Lloyd E.; Hill, Horace E.; and Phillips, Joseph L., to Boeing Company, The. Drill with guide tip. 3,779,664, Cl. 408-225.000.

Calgon Corporation: *See—*
Siagel, Robert Clayton; and Bloomquist, Arnold Eugene, 3,779,969.

Callahan, John William; and Capdeville, Martin J., to Pennwalt Corporation. Abrading apparatus with rotary index table. 3,778,935, Cl. 51-8.000.

Callinghan, Robert M.; and Hawthorne, John W., to United States Steel Corporation. Process for removing iron carbonyl with ozone. 3,780,163, Cl. 423-210.000.

Calvert, William Lemont; and Handwerk, Richard Herman, to Union Carbide Corporation. Particulate solids injector apparatus. 3,779,712, Cl. 23-288.00e.

Camacho, Salvador L. Refuse converting method apparatus utilizing long arc column forming plasma torches. 3,779,182, Cl. 110-8.00r.

Cambou, Andre Paul, to Societe Anonyme de Telecommunications. Translating winder for electric cables. 3,779,480, Cl. 242-158.00r.

Cambria, Emanuel F.: *See—*
Hurst, George H.; and Cambria, Emanuel F., 3,779,096.

Cameron, Donald D., to Du Pont de Nemours, E. I., and Company. Process for making filled methyl methacrylate articles. 3,780,156, Cl. 264-300.000.

Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, to BTR Industries Limited. Method of making handrails. 3,778,882, Cl. 29-450.000.

Camp, Carolyn J.; and Lindblom, Robert C., to Dow Chemical Company, The. Dielectric layer composition. 3,779,982, Cl. 260-41.00r.

Camp, Michel, to Rhone-Poulenc S.A. Storage stable concentrated aqueous emulsions prepared from a mixture of methylhydrogen siloxane and methyl polysiloxane, an aminated polymer and an epoxy compound. 3,779,967, Cl. 260-29.20m.

Campanella, Samuel J.; Suyderhuud, Henri G.; and Onufry, Michael, Jr., to Communications Satellite Corporation. Adaptive echo cancellers with compandors. 3,780,233, Cl. 179-170.002.

Campbell, Sterling A.: *See—*
Nau, Richard A.; and Campbell, Sterling A., 3,779,452.

Canada Cities Service, Ltd.: *See—*
Mitchell, David L.; and Speight, James G., 3,779,902.

Canadian Limited: *See—*
Chatfield, James E., 3,779,910.

Canavesi, Roberto: *See—*
Calcagno, Benedetto; Canavesi, Roberto; and Bertolini, Bollate Natale, 3,780,120.

Canon Kabushiki Kaisha: *See—*
Tchiyanagi, Toshikazo, 3,779,633.

Canton Company of Baltimore: *See—*
Talbert, William Lewis, 3,779,115.

Cantone, Natale. Agricultural machine for tilling the soil. 3,779,320, Cl. 172-60.000.

Canup, Robert E., to Texaco Inc. High frequency continuous wave ignition system. 3,779,226, Cl. 123-148.00e.

Capdeville, Martin J.: *See—*
Callahan, John William; and Capdeville, Martin J., 3,778,935.

Caperton, Charles B. Coupling means for sewer rod. 3,779,658, Cl. 403-343.000.

Caraway, Guy C. Adjustable speed projector with synchronized sound recorder. 3,779,632, Cl. 352-17.000.

Carborundum Company, The: *See—*
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, 3,779,808.

Cardinal Industries, Incorporated: *See—*
Staab, Donald C., 3,779,607.

Carless, Ernest Lee. Record album storage cabinet. 3,779,621, Cl. 312-15.000.

Carley, David R.; Lowrance, Byron R.; and Mangham, Jesse Roger. Preparation of dihydrocarbon beryllium compounds. 3,780,118, Cl. 260-66.00r.

Carley, David R., to Ethyl Corporation. Manufacture of beryllium hydride. 3,780,169, Cl. 423-645.000.

Carlson, Norman R.: *See—*
Matteson, Lucius G.; and Carlson, Norman R., 3,779,744.

Carlson, Ronald H., to Hooker Chemical Corporation. Iron chelate compound of tris (hydroxymethyl) phosphine oxide and nitrilotriacetic acid or alkali metal salts. 3,780,079, Cl. 260-439.00r.

Carmichael, Paul D.: *See—*
Pogonowski, Ivo C.; and Carmichael, Paul D., 3,779,019.

Caro, Inc.: *See—*
Study, Jon A., 3,779,164.

Carr, Herbert F.: *See—*
Tussey, Jimmy D.; Oakes, George W.; Carr, Herbert F.; and Melnick, Irving, 3,779,243.

Carroll, George. Pneumatic device for moving articles. 3,779,401, Cl. 214-1.0bb.

Carswell, Donald R., to Craftco Corporation. Manufacture of ricotta cheese. 3,780,199, Cl. 99-116.000.

Carter, William C.; and Wadia, Aspi B., to International Business Machines Corporation. Hybrid redundancy interface. 3,780,276, Cl. 235-153.0ae.

Carver, Edgar B.: *See—*
Fisk, Reginald C.; and Carver, Edgar B., 3,779,726.

Casale, William R.; Saltz, Fred; and Schreck, George R., to International Business Machines Corporation. Form run-out and jam detector for printer. 3,779,440, Cl. 226-74.000.

Case, Richard P.: *See—*
Ostenberg, Ramon K.; and Case, Richard P., 3,779,090.

Castelli, Pier Paolo: *See—*
Gardi, Rinaldo; Brianza, Carate; and Castelli, Pier Paolo, 3,780,072.

Caterpillar Tractor Company: *See—*
Dezelan, Joseph E., 3,779,133.
Kennicutt, Robert B.; Sitton, Ellis A.; and Yancey, John W., 3,779,615.

Catitti, Aldo: *See—*
Soglia, Luciano; Catitti, Aldo; Di Marino, Ciampino; and Sacerdoti, Giancarlo, 3,779,618.

Cavicchi, Roland. Wheel wrench adapter. 3,779,106, Cl. 81-177.00b.

Cebalo, Tony; and Miesel, John L., to Lilly, Eli, and Company. Triazoline phosphates. 3,780,052, Cl. 260-308.00c.

Celada, Joan; MacKay, Patrick W.; and de la Pena, Ramon, to Fierro Esponja S.A. Method for reducing particulate metal ores to sponge iron with recycled reducing gas. 3,779,741, Cl. 75-35.000.

Celanese Coatings Company: *See—*
Hicks, Darrell B., 3,779,977.

Celanese Corporation: *See—*
Boom, Abraham A., 3,780,255.
Di Edwardo, Andrew; Dix, Robert; and Riggs, John, 3,779,983.
Keuchel, Herbert W.; and Polestak, Walter J., 3,780,149.
Park, Im Keon, 3,779,789.

Celotex Corporation, The, mesne: *See—*
Ohlhauser, Ernest F.; and Boggild, Robert, 3,780,281.

Centre National de Recherches Metallurgiques Centrum Voor Research in de Metallurgie: *See—*
Hancart, Jules; and Houbart, Ivan, 3,779,646.

Centre National d'Etudes Spatiales: *See—*
Regipa, Robert, 3,779,443.

Ceskoslovenska akademic ved: *See—*
Stoy, Artur; and Urbanova, Renata, 3,779,792.

Chabas & Besson S.A.: *See—*
Besson, Louis Pierre Albert, 3,779,064.

Chabee, George G., to Cumberland Engineering Company, Inc. Knife holder and knife therefor. 3,779,123, Cl. 83-698.000.

Chaikin, Saul W.: *See—*
Cope, Oswald James; and Chaikin, Saul W., 3,779,774.
Cope, Wswald James; and Chaikin, Saul W., 3,779,768.

Chamay, Anthony Joseph; and Johnston, Richard Paul, to General Electric Company. Combined thrust reversing and throat varying mechanism for a gas turbine engine. 3,779,010, Cl. 60-226.00a.

Chamberlain, John, to United Aircraft Corporation. Combustion chamber for gas dynamic laser. 3,779,695, Cl. 431-351.000.

Champion International Corporation: *See—*
Powell, Mabrin P., 3,779,941.
Vassiliades, Anthony E.; Nauman, Edeard F.; and Shroff, Shrenik, 3,779,957.

Chanaud, Robert Charles: *See—*
Hayden, Richard Earle; and Chanaud, Robert Charles, 3,779,338.

Chandler, Ronald W.: *See—*
Anderson, Reg A.; Chandler, Ronald W.; Mueller, Frederick N.; and Osborn, Norbert I., 3,779,519.

Chaney, Donal W.: *See—*
Herpich, William A.; and Chaney, Donal W., 3,779,409.

Chang, Herbert Yu-Pang; Elliott, Roger Alan; Senese, Daniel John; and Smith, Thomas Loyd, to Bell Telephone Laboratories, Incorporated. Self-checking decision logic circuit. 3,779,458, Cl. 235-153.0bg.

Chang, Pei Tsing: *See—*
MacHenry, Richard; and Chang, Pei Tsing, 3,779,704.

Chaput, Victor B., 1/2 to Simoneau, Alex. Pocketed gear differential. 3,779,101, Cl. 74-711.000.

Charlton, William D. Trailer hitch. 3,779,653, Cl. 403-3.000.

Chase, W. M. Company: *See—*
Maisner, Leonard S., 3,779,718.

Chatfield, James E., to Canadian Limited. Liquid treatment plant and process, particularly for waste water. 3,779,910, Cl. 210-49.000.

Chechak, Jonas J., to Eastman Kodak Company. Process for preparing electrophotographic liquid developing compositions. 3,779,924, Cl. 252-62.100.

Chelminski, Stephen V., to Bolt Associates, Inc. Confined-liquid seismic exploration methods and systems. 3,779,335, Cl. 181-.5nc.

Chemplex Company: *See—*
Pullakat, Thomas J.; and Shida, Mitsuzo, 3,780,011.

Cheney, Lee Cannon: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,780,032.

Cheney, Stanley O. Convertible snow vehicle trailer. 3,779,572, Cl. 280-21.00r.

Chevalier, Arthur A., to Marathon Oil Company. Cable catcher. 3,779,347, Cl. 188-65.200.

Chiba, Toshio; Yonezawa, Teruhiko; Kobayashi, Jiro; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Light-sensitive materials. 3,779,775, Cl. 96-88.000.

Chicago Bridge & Iron Company: *See—*
Sudduth, Jackie Wayne, 3,778,969.

Chicago Fire Brick Company: *See—*
Philander, Herber C., 3,778,950.

Chimura, Toshihiko, to Sony Corporation. Magnetic recording and reproducing apparatus. 3,779,482, Cl. 242-190.000.

Chisholm, Daniel R.: *See—*
Polanskyj, Bohdan S.; Solomon, Jack M.; Chisholm, Daniel R.; and Bluestein, Bernard R., 3,780,107.

Chisso Corporation: *See—*
Ando, Masao, 3,780,250.

Chlipalski, Adam. Apparatus for handling liquid filled flexible pouches. 3,778,972, Cl. 53-159.000.

Chomerics, Inc.: *See—*
Seeger, Richard E., Jr.; and Coulter, John G., 3,780,237.

Chookazian, Mark. Gasket for joining plastic tubes. 3,779,564, Cl. 277-80.000.

Chow, Philip Y., to Santa Fe International Corporation. Mooring and oil transfer apparatus. 3,778,854, Cl. 9-8.00p.

Christensen, Borge; and Hansen, Hans, said Christensen assor. to Ingeniorfirmaet Borge Christensen Kastanievalle and said Hansen assor. to Ingeniorfirmaet Hans Hansen. Automatic packing device for pallet stacks and the procedure peculiar hereto. 3,778,960, I. 53-29.000.

Christensen, Burton G.; and Leanza, William J., to Merck & Co., Inc. Process for preparing cephalosporin compounds. 3,780,031, Cl. 260-243.00c.

Christensen, Burton G.; and Firestone, Raymond A., to Merck & Co., Inc. Process for preparing substituted cephalosporins. 3,780,034, Cl. 260-243.00c.

Christensen, Walter L., to Graco Metal Products, Inc. Swing operated music box. 3,779,124, Cl. 84-94.00c.

Christie, Christopher E.: *See—*
Appleby, Paul E.; Riggs, Robert S.; and Christie, Christopher E., 3,779,834.

Christie, Gerald Anthony; and Bressington, Edwin Thomas, to Salient Engineering Limited. String lasting. 3,778,856, Cl. 12-7.900.

Christofas, Alkis: *See—*
Dukert, Andrew Anthony; and Christofas, Alkis, 3,779,854.

Chromalloy American Corporation: *See—*
Ellis, John L.; Mal, N. Kumar; and Tarkan, Stuart E., 3,779,720.
Palmenberg, Edward C., 3,778,906.

Chromally American Corporation: *See—*
Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., 3,779,719.

Chu, Chung Ying: *See—*
Spalt, Howard A.; Chu, Chung Ying; and Niketas, Paul, 3,780,017.

Chuard, Marcel: *See—*
Friedling, Gerard; and Chuard, Marcel, 3,778,979.

Ciavattoni, Anthony: *See—*
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Ciba-Geigy AG: *See—*
Frey, Christoph, 3,780,057.
Hari, Stefan; and Ronco, Karl, 3,780,049.
Hari, Stefan; and Ronco, Karl, 3,780,071.
Hubele, Adolf; and Rohr, Otto, 3,780,068.
Jaeger, Horst; and Schaefer, Paul, 3,780,093.
Kitzing, Rainer; Marthaler, Max; and Oetiker, Alfred, 3,779,937.
Porret, Daniel; Habermeier, Juergen; and Batzer, Hans, 3,779,949.

Ciba-Geigy Corporation: *See—*
Dexter, Martin; Spivack, John D.; and Steinberg, David H., 3,779,945.
Gachwend, Heinz Werner, 3,780,043.
Greber, Gerd; and Darns, Roland, 3,779,990.
Knell, Martin, 3,780,103.
Rembold, Heinz; Baumann, Dieter; and Habermeier, Jurgen, 3,779,988.

C.I.T. Ralphs Limited: *See—*
Mawhy, Roger Frederick, 3,779,426.

Cities Service Company: *See—*
Kerschner, Paul M., 3,779,978.

Cities Service Oil Company: *See—*
Brown, Larry P.; and Rhoades, Vaughan W., 3,779,421.
Kerschner, Paul M.; Badin, Elmer J.; and Cresti, Aldo, 3,779,724.

Clad Metals Corporation: *See—*
El Bindari, Ahmed, 3,778,878.

Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., to Chromally American Corporation. Diffusion coating of jet engine components and like structures. 3,779,719, Cl. 29-197.000.

Clark, Gordon J., to Textron, Inc. Apparatus for bonding bearing liners. 3,779,828, Cl. 156-358.000.

Clark, James Webster. Birdhouse sparrow trap. 3,778,922, Cl. 43-61.000.

Clark, John R.; and Bluestein, Claire, to Witco Chemical Corporation. Sulfone-ester compounds as plasticizers for polyvinyl fluoride resins. 3,779,975, Cl. 260-30.8pr.

Clarke, Ellis Whiteside. Means for controlling fluid flow. 3,779,507, Cl. 251-9.000.

Clason, Jan C., to N.V. Fabriek Van Electriche Apparaten Voorheen F. Hazemiejer & Co. Method of applying a field control device to an insulated conductor of a cable and an apparatus for carrying out the method. 3,778,888, Cl. 29-592.000.

Clausen, Erik; and Clausen, Johannes. Rear projection screen and method of making same. 3,779,630, Cl. 350-117.000.

Clausen, Johannes: *See—*
Clausen, Erik; and Clausen, Johannes, 3,779,630.
Clinton, Margaret A.; and Wells, Martin G. H., to Jones & Laughlin Steel Corporation. Corrosion resistant tinplate. 3,779,798, Cl. 117-131.000.
Clorox Company, The: *See—*
Foley, Lary L., 3,778,849.
Close, James Garth. Attachment for perforated boards. 3,778,955, Cl. 52-758.00d.
Clouth Gummuwerke AG: *See—*
Lachmann, Hans-Peter, 3,779,536.
CMI Corporation: *See—*
Smith, Don W., 3,779,662.
Swisher, George W., Jr.; and Hale, Autho, 3,778,912.
Coal Industry Patents Limited: *See—*
Armstrong, Michael Pearson, 3,779,381.
Coates, Alfred E.: *See—*
Vegh, Bertalan J.; and Coates, Alfred E., 3,779,891.
Cockerill-Ougree-Providence et Esperance-Longdoz en abreze "-Cockerill": *See—*
Streel, Dominique Thomas Francois, 3,779,802.
Coe, Roger: *See—*
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Cohen, Guy: *See—*
Lhomore, Pierre; Cohen, Guy; and Jacquinot, Bernard, 3,780,115.
Cohen, Harvey M.: *See—*
Sioui, Richard H.; and Cohen, Harvey M., 3,779,727.
Cohen, Morrel H.: *See—*
Miles, Malcolm G.; Wilson, James D.; and Cohen, Morrel H., 3,779,814.
Cole, Edward L.: *See—*
Wilson, Raymond F.; and Cole, Edward L., 3,779,895.
Collins Radio Company: *See—*
Stover, Harris A., 3,780,279.
Collins, Richard D.: *See—*
Marion, Thomas E.; and Collins, Richard D., 3,779,191.
Collins, Robert J., to Upjohn Company, The. Animal feed for obtaining increased production in animals. 3,780,179, Cl. 424-248.000.
Colorapid Limited: *See—*
Woollacott, Derrick Sunnocks, 3,779,147.
Columbia Broadcasting System, Inc.: *See—*
Glenn, William E., Jr., 3,780,212.
Columbia Machine, Inc.: *See—*
Schmitt, Robert A., 3,779,361.
Combustion Equipment Associates, Inc.: *See—*
Monro, Richard J., 3,779,460.
Comitato Nazionale per l'Engergia Nucleare: *See—*
Soglia, Luciano; Catitti, Aldo; Di Marino, Ciampino; and Sacerdoti, Giancarlo, 3,779,618.
Commanday, Maurice R.: *See—*
Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., 3,779,719.
Commissariat a l'Energie Atomique: *See—*
Brion, Jacques, 3,779,183.
Communication Equipment & Contracting Co., Inc.: *See—*
Pirnie, Robert M., Jr.; and Pirnie, Robert M., III, 3,780,227.
Communications Satellite Corporation: *See—*
Campanella, Samuel J.; Suyderhuud, Henri G.; and Onufry, Michael, Jr., 3,780,233.
Compagnie, General d'Electricite: *See—*
Aupoix, Marcel; Moisson-Franckhauser, Francois; Leroux, Jean-Marie; and Prost, Roger, 3,780,205.
Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Lejeune, Daniel, 3,779,301.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Rocton, Lucien, 3,780,210.
Computer Power Systems Inc.: *See—*
Mayle, Alfred J., 3,780,339.
Comsec Corporation: *See—*
Simonson, Harris J., 3,780,378.
Conkling, William Collins, to Pennwalt Corporation. Automatic changeover valve for chlorine gas system. 3,779,268, Cl. 137-113.000.
Conn, Alvie P. Gas instrument liquid separator. 3,778,977, Cl. 55-219.000.
Conner, Charles J., to United States of America, Agriculture. Bright pink, lavender and blue mineral dyeing single bath process for cellulosics. 3,779,702, Cl. 8-52.000.
Construction Specialties, Inc.: *See—*
McGeary, Frank L.; and Zampetti, Patrick L., 3,779,660.
Conta, Robert L., to Gleason Works, The. Process for heating and sintering ferrous powder metal compacts. 3,779,747, Cl. 75-200.000.
Conti, Walter; and Corsini, Pasquale, to Snam Progetti S.p.A. Process for the production of composite fibers, apparatus suitable to realize the same and fibers obtained thereby. 3,778,873, Cl. 28-72.300.
Continental Oil Company: *See—*
Gregory, Mercer Duane, 3,779,908.
Contraves AG: *See—*
Schon, Kurt, 3,779,279.
Cooper, John, to Matramatic Company Limited. Method and apparatus for buttoning upholstery. 3,778,853, Cl. 5-356.000.
Cooper, Roy David: *See—*
Gale, Frederick Henry; and Cooper, Roy David, 3,780,332.
Cope, Oswald James; and Chaikin, Saul W., to Xidex Corporation. Silicone surfactants for vesicular films. 3,779,774, Cl. 96-87.00r.
Cope, Wswald James; and Chaikin, Saul W., to Xidex Corporation. Fluorocarbon surfactants for vesicular films. 3,779,768, Cl. 96-75.000.
Corbaty, Martin L.: *See—*
Rosenfeld, Daniel D.; and Corbaty, Martin L., 3,780,042.
Corble, John C.: *See—*
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.
Corning Glass Works: *See—*
Kapron, Felix P.; and Keck, Donald B., 3,779,628.
Kapron, Felix P.; and Keck, Donald B., 3,780,295.
Cornyn, William S., Jr.; Dier, Stephen A.; and Lynas, Robert M., to TRW Inc. Data normalizing method and system. 3,779,457, Cl. 235-151.300.
Corsini, Pasquale: *See—*
Conti, Walter; and Corsini, Pasquale, 3,778,873.
Cosmo, Nicola: *See—*
Ravera, Giovanni; Cosmo, Nicola; and Siletto, Giorgio, 3,779,638.
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, to Carborundum Company, The. Polyester coated wire. 3,779,808, Cl. 117-232.000.
Cotton, Incorporated: *See—*
Lord, John Garvin, 3,778,913.
Coughlin, Donald W. Strainer shut-off valve with manual back-flush. 3,779,388, Cl. 210-390.000.
Coulter, John G.: *See—*
Seeger, Richard E., Jr.; and Coulter, John G., 3,780,237.
Cowan, Larry Clyde, to Leesona Corporation. Fluid operated logic device. 3,779,267, Cl. 137-111.000.
Cowles, Raymond I.: *See—*
Irish, Charles G., Jr.; Silva, Joseph W.; and Cowles, Raymond I., 3,779,167.
Cox, James R., to Cox, Jim, Company. Form support bracket. 3,779,500, Cl. 248-288.000.
Cox, Jim, Company: *See—*
Cox, James R., 3,779,500.
Cox, William L.: *See—*
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Cozewith, Charles; and Tornqvist, Erik G. M., to Esso Research and Engineering Company. Butadiene polymerization catalyst. 3,779,944, Cl. 252-429.00b.
Cozewith, Charles; and Robison, Samuel B., to Esso Research and Engineering Company. Catalyst for the production of copolymer. 3,780,005, Cl. 260-88.02r.
Craftco Corporation: *See—*
Carswell, Donald R., 3,780,199.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. acid derivatives. 3,780,027, Cl. 260-239.006.
Crapuchettes, Paul Wythe, to Litton Systems, Inc. Microwave oven power supply circuit. 3,780,252, Cl. 219-10.055.
Cresti, Aldo: *See—*
Kerschner, Paul M.; Badin, Elmer J.; and Cresti, Aldo, 3,779,724.
Creusot-Loire: *See—*
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Creusot-Loire a Societe Anonyme: *See—*
Leroy, Pierre; Gombert, Marcel; Queuleu, Metz; and Sprunck, Emile, 3,779,534.
Crewe, Ferdinand: *See—*
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.
Crisafulli, Angelo J. Backhoe attached pump. 3,779,670, Cl. 417-231.000.
Cristea, Viorel: *See—*
Simonfi, Paul; and Cristea, Viorel, 3,779,734.
Crone, John M., Jr.: *See—*
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Westergren, George A.; Koland, David G.; and Crooks, Stanley R., 3,778,863.
Crosby, Noble Wellington; and Walker, Robert Clinton, to Local Industries Limited. Vibration damper. 3,780,207, Cl. 174-42.000.
Crosweller, Walker, & Company, Limited: *See—*
Arbon, Dennis Charles, 3,779,467.
Crouzet: *See—*
Jullien-Davin, Jean, 3,779,688.
Crowe, Curtis W., to Dow Chemical Company, The. Acidizing composition. 3,779,916, Cl. 252-8.55c.
Crowley, John H. Portable smoke measuring device. 3,779,650, Cl. 356-207.000.
Crown Cork & Seal Company, Inc.: *See—*
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Crump, Robert O.: *See—*
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Cryer, Edward, to Lucas, Joseph, (Industries) Limited. Self cancelling direction indicator switches. 3,780,241, Cl. 200-61.027.
Cubic Corporation: *See—*
Lind, Larry W., 3,780,265.
Cumberland Engineering Company, Inc.: *See—*
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Cummings, Alan F.; Binz, Ernest F.; and Freeman, Gene G., to North American Rockwell Corporation. Deployable parabolic antennas. 3,780,375, Cl. 343-915.000.
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Privott, Wilbur J., Jr.; and Cunningham, Robert E., 3,780,153.

Cuoco, Michael J. Automatic mouse-trap device. 3,778,923, Cl. 43-69.000.

Curry, James R. Dual function wrench. 3,779,104, Cl. 81-119.000.

Curtis, William I.; and McDaniel, Augustus C., Jr., to Hill Acme Company, The. Shearing apparatus. 3,779,116, Cl. 83-378.000.

Curtiss-Wright Corporation: *See—*
Scott, Bruce E., 3,779,879.

Cushman, Charles R.; Hale, James C.; and Anderson, Vernon A., to Autometrics Co. Particle size and percent solids monitor. 3,779,070, Cl. 73-61.00r.

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Cutler, Lester M.; and Friedman, Paul, to Vabra-Spa Products, Inc. Waterproof battery operated vibrator. 3,779,238, Cl. 128-36.000.

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Cycle-Drive Corporation: *See—*
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D-Mac Limited: *See—*
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Da Costa, Nicholas Mario: *See—*
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Daigle, Paul A.; and Gronholz, Donald D., to Donaldson Company, Inc. Air cleaner with folding side walls. 3,778,985, Cl. 55-497.000.

Daimler Benz Aktiengesellschaft: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
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Worner, Gunter, 3,779,352.

D'Alelio, Gaetano F. Halogenated ethylenically unsaturated phosphates. 3,780,144, Cl. 260-956.000.

Dall'Asta, Gino, to Montecatini Edison S.p.A. Process for polymerizing cycloolefins to polyalkenamers. 3,780,009, Cl. 260-93.100.

D'Amico, John. Swivel tailed kite. 3,779,490, Cl. 244-153.00r.

Dannels, Bobby F.; and Shepard, Alvin F., to Hooker Chemical Corporation. Thermoplastic and thermosetting allyl carbamate resins. 3,779,995, Cl. 260-77.5ma.

Danner, Wilson E.; Hammes, Paul A.; and Everson, Charles W., to Merck & Co., Inc. Curing of meats. 3,780,192, Cl. 426-266.000.

Darns, Roland: *See—*
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Janssen, Alexander Patton, 3,778,914.

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Datwyler, Walter F.: *See—*
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Daublebsky, Peter; and Zeitzschel, Gunter, to Licentia Patent-Verwaltungs-G.m.b.H. Nuclear reactor control rod drives. 3,779,134, Cl. 91-44.000.

David, Curry Beach, to Arizona Chemical Company. Molecular sieve 13-X catalyzed isomerization of alpha-pinene-improvement of catalyst activity by iodine. 3,780,124, Cl. 260-675.500.

David, Roger F.: *See—*
Benoun, Samuel M.; and David, Roger F., 3,779,550.

Davis, Billy E., to Signet Controls, Inc. Sphere launcher and receiver. 3,779,270, Cl. 137-268.000.

Davis, George James: *See—*
Schuftan, Paul Maurice; Armond, John Walter; Leader, John Henry; and Davis, George James, 3,779,028.

Davis, Paul, to Sweetheart Plastics Inc. Disposable plastic container and cover. 3,779,418, Cl. 220-60.00r.

Dawson, John M.: *See—*
Kaw, Predhiman K.; and Dawson, John M., 3,779,864.

Dawson, Juan C., to Bendix Corporation, The. Interferometric device for indicating displacement along one dimension during motion along another dimension. 3,779,647, Cl. 356-109.000.

Day, John J.; and Hirschman, Paul S., to Ocean Protein Corporation. Filter. 3,779,387, Cl. 210-232.000.

Day, Leon E., 50% to Rolen, William C. and Sellers, James B. Earth anchor. 3,778,943, Cl. 52-167.000.

Dayco Corporation: *See—*
Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., 3,779,846.

De Beers Industrial Diamond Division, Limited: *See—*
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De Bell, Lawrence R.; and Price, David D., Jr., to Economy Co. Recorder having manually actuated means for pivotal vertical movement of the head into operating position. 3,780,231, Cl. 179-100.2ca.

De Jersey, C. L., & Sons Propritary Limited: *See—*
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De Jersey, David Charles, to De Jersey, C. L., & Sons Propritary Limited. Production of waffles and like food products. 3,780,193, Cl. 426-505.000.

de la Pena, Ramon: *See—*
Celada, Joan; MacKay, Patrick W.; and de la Pena, Ramon, 3,779,741.

De Lloret, Herminia Alvarez Gil. Container for the components of mixed drinks. 3,779,372, Cl. 206-47.00a.

De Marco, Joseph V.: *See—*
Jett, Howard V.; and De Marco, Joseph V., 3,779,465.

De Marsico, Henry J.; Strugar, Daniel; and Wu, Dao-Tsing, to Du Pont de Nemours, E. I., and Company. Acrylic polymer modified polyvinyl fluoride coating compositions. 3,779,976, Cl. 260-32.80r.

De Pont de Nemours, E. I., and Company: *See—*
Way, John L., 3,780,278.

De Santis, G. William, to Essex Chemical Corporation. Polyurethane sealant-primer system. 3,779,794, Cl. 117-72.000.

De Vries, Douwe: *See—*
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Dean, Donald G.: *See—*
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Deans, David Robert, to Imperial Chemical Industries Limited. Gas chromatography. 3,778,975, Cl. 55-197.000.

Deering Milliken Research Corporation: *See—*
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Deinert, Roedolf Hendrik: *See—*
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Deitch, Ronald S. Magnetic lock. 3,779,052, Cl. 70-38.00c.

Delorean, John Zachary. Building construction. 3,778,953, Cl. 52-745.000.

Dembovsky, Vladimir, to Vysoka Skola Banska. Plasma kiln. 3,780,201, Cl. 13-31.000.

Den Ottolander, Leendert, to Walpro Plastics N.V. Method and device for manufacturing a flat cable as well as a cable acquired by means of the same. 3,778,879, Cl. 29-203.00c.

Dennis, John, Jr.: *See—*
McKenney, Neal D.; and Dennis, John, Jr., 3,779,693.

Denny, John P.; Solbach, Robert C.; and Jagaciak, Pen George J., to Kawecki Berylco Industries, Inc. Ductile consolidated beryllium. 3,779,713, Cl. 29-182.000.

Denver Plastics Inc.: *See—*
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Denzel, Theodore; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Derivatives of pyrazolo(3',4'-2,3)pyrido(4,5-E)B-benzo-1,5-diazepines. 3,780,047, Cl. 260-296.00p.

DePenti, Kenneth Louis, to Midland-Ross Corporation. Railway car coupler. 3,779,397, Cl. 213-151.000.

Deumens, Johannes J. M.; and Groen, Siemen H., to Stamicarbon N.V. Process for the preparation of 4-oxocapronitrile. 3,780,082, Cl. 260-465.100.

Deumens, Johannes J. M.; and Stijfs, Petrus A. M. J., to Stamicarbon N.V. Process for preparing α-mono-cyanoethylated butanone. 3,780,083, Cl. 260-465.100.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Kabisch, Gerhard; and Kunkel, Wolfgang, 3,780,168.
Schwarze, Werner; and Weigert, Wolfgang, 3,780,077.

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Devlin, Barry R. J.: *See—*
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Devries, Donald L., to Atlantic Richfield Company. Lubricating oil composition. 3,779,920, Cl. 252-33.400.

Dewaele, Sylvain Achiel Raoul, to S.A. Texaco Belgium N.V. Method for the preparation of 1,2,4,5-tetrahydroxybenzene. 3,780,114, Cl. 260-621.00h.

Dewar, Bruce Ian, to De Beers Industrial Diamond Division, Limited. Process for metal coating diamonds. 3,779,873, Cl. 204-20.000.

Dewhirst, Fred Arlington, to Bell Telephone Laboratories, Incorporated. Lamp enclosure. 3,780,284, Cl. 240-41.00r.

Dexter, Martin; Spivack, John D.; and Steinberg, David H., to Ciba-Geigy Corporation. Mixtures of 3-(3,5-dialkyl-4-hydroxy phenyl-propionic acid esters of alkanediols. 3,779,945, Cl. 252-404.000.

Deyerl, Herman F.; and Reynolds, Robert J. Roadbed apparatus for model vehicles. 3,780,235, Cl. 191-13.000.

Dezelan, Joseph E., to Caterpillar Tractor Company. Make-up valve for hydraulic control circuit. 3,779,133, Cl. 91-6.000.

Dhein, Rolf; Meissner, Hans-Jurgen; and Kuchenmeister, Rolf, to Bayer Aktiengesellschaft. Lacquer binders. 3,779,961, Cl. 260-19.00u.

Di Edwardo, Andrew; Dix, Robert; and Riggs, John, to Celanese Corporation. Acrylic fibers and films which particularly are suited for thermal stabilization. 3,779,983, Cl. 260-45.70s.

Di Fiore, Lucio: *See—*
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Di Ianni, Daniel: *See—*
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Di Marino, Ciampino: *See—*
Soglia, Luciano; Catitti, Aldo; Di Marino, Ciampino; and Sacerdoti, Giancarlo, 3,779,618.

Diamler-Benz Aktiengesellschaft: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; Krohn, Hellmut; and Stein, Hermann, 3,779,331.

Diamond Shamrock Corporation: *See—*
Hamilton, Donald N.; and Kennedy, Alexander W., 3,779,815.
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Welsh, Jay Y., 3,780,159.

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Didier-Werke A.G.: *See—*
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Ditzler, Richard C.: *See—*
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Dix, Robert: *See—*
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Dodds, Harold E.: *See—*
Kennedy, C. Trowbridge; Stout, David J.; and Dodds, Harold E., 3,779,799.

Doemen, Benno; and Muller, Rolf, to Papst-Motoren KG. Brushless dynamo electric machine, particularly electric motor. 3,780,363, Cl. 318-254.000.

Dolan, Vincent: *See—*
Tarbox, Willis; Dolan, Vincent; and Harman, Ralston L., 3,779,566.

Dollinger, Robert E., to Phillips Petroleum Company. Carbon black mixing apparatus. 3,779,683, Cl. 425-222.000.

Domecki, Edward H. Method of packing shrimp. 3,780,196, Cl. 426-393.000.

Donald, Malcolm: *See—*
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Donaldson Company, Inc.: *See—*
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Donaldson, Tommie C. Threshold anchor device. 3,778,931, Cl. 49-380.000.

Donnell, Frank R., to Spin Company. Pipeline squeegee apparatus. 3,778,859, Cl. 15-104.30r.

Dorler, Jack A.; Forneris, John L.; and Swietek, Donald J., to International Business Machines Corporation. Schottky barrier diode read-only memory. 3,780,320, Cl. 307-303.000.

Dorn, Ludwig; Mengel, Manfred; and Heinze, Gerhard, to Bayer Aktiengesellschaft. Production of transition metal-containing supported catalysts. 3,779,946, Cl. 252-448.000.

Dornbush, Albert Carl: *See—*
Van Lear, George E.; and Dornbush, Albert Carl, 3,780,063.

Dorr, Karl-Heinz: *See—*
Drechsel, Herbert; Dorr, Karl-Heinz; Grimm, Hugo; and Rowedder, Gustav, 3,780,166.

Dorris, John P., to Pre-Cast Concrete Products, Ltd. Bell-liner protector. 3,778,941, Cl. 52-124.000.

Dorsch, Robert E., to Uniroyal Inc. Method and apparatus for improving the tensile strength of a multifilament glass strand. 3,779,844, Cl. 156-73.000.

Doss, Richard C.; and Kuper, Donald G., to Phillips Petroleum Company. Purification of alkali metal salts of aromatic carboxylic acids. 3,780,097, Cl. 260-525.000.

Douek, Maurice: *See—*
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Crowe, Curtis W., 3,779,916.
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Doyle, William C., Jr., to Gulf Research & Development Company. 1,3,4-Thiadiazine herbicides. 3,779,736, Cl. 71-90.000.

Doyle, William F.; and Artzer, Charles W. Bulkhead. 3,779,174, Cl. 105-376.000.

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Dufault, Emmanuel Joseph; and Heeks, David Andrew, to Syron Corporation. Separation process. 3,780,075, Cl. 260-412.600.

Duke, Edward D.; and Marquardt, Julius F., to International Harvester Company. Rearfacing engine and rearaxle having offset drive line. 3,779,329, Cl. 180-54.00f.

Dukert, Andrew Anthony; and Christofas, Alkis, to Pennwalt Corporation. Polyvinylidene fluoride laminate construction and method. 3,779,854, Cl. 161-156.000.

Dumke, William P.; Rideout, Vincent L.; and Woodall, Jerry M., to International Business Machines Corporation. Bipolar transistor with a heterojunction emitter and a method fabricating the same. 3,780,359, Cl. 317-235.00r.

Dunhill Lighters, Limited: *See—*
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Dunlop Holdings Limited: *See—*
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Dunlop Limited: *See—*
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Dustin, Daniel S., to Minnesota Mining and Manufacturing Company. Presensitized light-sensitive letterpress printing makeready. 3,779,761, Cl. 96-38.200.

Duval, Pierre: *See—*
Berquin, Yves; Duval, Pierre; and Alleton, Jean-Claude, 3,780,161.

Dvorkina, Klara Moissevna: *See—*
Nikolaev, Petr Ivanovich; Ignatov, Jury Lazarevich; Smirnov, Sergei Ivanovich; Oxengorn, Naum Izrailevich; Gigineishvili, Rimma Fominichna; Dvorkina, Klara Moissevna; and Iskandyarov, Akhmet Mukhsinyatovich, 3,779,868.

Dykeman, Howard E., to Heyl & Patterson, Inc. Clamshell bucket unloader with rope operated trolley. 3,779,395, Cl. 212-81.000.

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Eagen, John F.; and Gudelis, David A., to Esso Research and Engineering Company. Immiscible injection of solvent in dilution chilling of waxy oils. 3,779,894, Cl. 208-33.000.

Earman, Ernest, Jr. Static electricity deshocker. 3,780,345, Cl. 317-2.00r.

Easley, Challice F. Earth anchor. 3,778,944, Cl. 52-159.000.

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Wadsworth, Donald H.; and Perkins, William C., 3,779,989.
Young, David A.; and Brannock, Kent C. (said Young assor. of 1/2), 3,780,111.

Ebald, Inc., mesne: *See—*
Paul, Dwaine M., 3,779,461.

Eckerle, Otto: *See—*
Eckerle, Otto; and Jung, Robert (said Jung assor. to said), 3,779,674.

Eckerle, Otto; and Jung, Robert, said Jung assor. to said Eckerle, Otto. High-pressure gear pump. 3,779,674, Cl. 418-71.000.

Ecodyne Corporation: *See—*
Ryan, Leo F., 3,779,386.

Ecodyne Corporation, mesne: *See—*
Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, 3,779,523.

Economy Co.: *See—*
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Economy, James: *See—*
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, 3,779,808.

Ecreverrta, Nicholas Guerrico. Handle for manual percussion tools. 3,779,296, Cl. 145-61.00h.

Edden, Benjamin. Amusement and educational device. 3,778,927, Cl. 46-233.000.

Eddleman, Hardy T.; and Schmitz, Richard L., to Spectrum Medical Industries, Inc. Combined filter paper support and filtrate container. 3,779,415, Cl. 215-48.000.

Edrinn, Roger C., to Hewlett-Packard Company. Automatic paper loading and guiding mechanism. 3,779,473, Cl. 242-54.00r.

Edwards, Albert, to Baker Perkins Limited. Mixing chamber construction. 3,779,520, Cl. 259-151.000.

Edwards, April Wood: *See—*
Edwards, George Wheeler; and Edwards, April Wood, 3,780,183.

Edwards, Arnold Glen; and Jenkins, Charles J., to Halliburton Company. Pressure responsive auxiliary disc valve and the like for well cleaning, testing, and other operations. 3,779,263, Cl. 137-68.000.

Edwards, George Wheeler; and Edwards, April Wood. Plant protein product and process. 3,780,183, Cl. 426-50.000.

Eggington, Wilfred J., to Aerojet-General Corporation. Cells for fluid cushion vehicles. 3,779,334, Cl. 180-121.000.

Eggleton, Reginald C.; and Weidner, Albert W., to Interscience Research Institute. Ultrasonic catheter with rotating transducers. 3,779,234, Cl. 128-2.00r.

Eisen, Howard L., to Glamorene Products Corporation. Alkaline oven cleaning composition. 3,779,933, Cl. 252-118.000.

Ekey, William J., to McNeil Corporation. Stage for a centrifugal pump. 3,779,668, Cl. 415-199.000.

El Bindari, Ahmed, to Clad Metals Corporation. Apparatus for inserting rods into coiled tubes. 3,778,878, Cl. 29-200.00r.

Elec-Tron, Inc.: *See—*
Beddow, Elmer J., 3,780,245.

Electrocardio Dynamics Inc.: *See—*
Goeltz, Richard R.; Schumacher, Howard; and Roth, Albee, 3,779,237.

Electronic Control & Surveillance Limited: *See—*
Boddy, Michael Gordon; Sewell, Graham; and Sewall, Michael, 3,780,328.

Electroprint, Inc.: *See—*
Pressman, Gerald L.; Frohbach, Hugh; and Blake, David E., 3,779,166.

Electroprint, Inc., mesne: *See—*
Pressman, Gerald L.; and Kittredge, Thomas D., 3,780,376.

Elkem A/S: *See—*
Krogsrod, Harald, 3,779,510.

Elliott, Roger Alan: *See—*
Chang, Herbert Yu-Pang; Elliott, Roger Alan; Senese, Daniel John; and Smith, Thomas Loyd, 3,779,458.

Ellis, Greer, to Vishay Intertechnology, Inc. Calibrator for determining the magnitude of strains in rigid articles. 3,779,065, Cl. 73-1.00r.

Ellis, John L.; Mal, N. Kumar; and Tarkan, Stuart E., to Chromalloy American Corporation. Plasma sprayed titanium carbide tool steel coating. 3,779,720, Cl. 29-195.00a.

Elsner, Edwin C. Combination night light and liquid vaporizer. 3,780,260, Cl. 219-271.000.

Elson, Ronald D.; Krenke, Norman O.; and Ingram, Charles E., to Baker Perkins Inc. Disc type pattern maker and method. 3,779,363, Cl. 198-33.0ab.

Emerson Electric Co.: *See—*
Harelson, Robert G., 3,779,474.

EMI-Varian, Limited: *See—*
Gale, Frederick Henry; and Cooper, Roy David, 3,780,332.

Emory, John E., Jr.: *See—*
Emory, John E., Sr.; and Emory, John E., Jr., 3,778,918.

Emory, John E., Sr.; and Emory, John E., Jr., to Big Jon, Inc. Downrigger release for fishing. 3,778,918, Cl. 43-43.120.

Emoto, Takeo: *See—*
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Emslie, Jean McPhaul: *See—*
Emslie, Robert Steele, 3,779,784.

Emslie, Robert Steele; deceased (by Emslie, Jean McPhaul; administratrix), to Du Pont de Nemours, E. I., and Company. Composite fibers of alkali metal hexatitanate and rutile TiC_2. 3,779,784, Cl. 106-300.000.

Energy Sciences, Inc.: *See—*
Nablo, Sam V., 3,780,308.
Nablo, Samuel V., 3,779,706.

Engelhart, John E.: *See—*
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Engelhart, John E., to Esso Research and Engineering Company. Malononitrile oxime derivatives. 3,780,085, Cl. 260-465.400.

Entin, Leonard P.: *See—*
Ross, Thorvald S., Jr.; and Entin, Leonard P., 3,779,157.

Entwistle, Ian D.; Williams, Peter J.; and Devlin, Barry R. J., to Shell Oil Company. Herbicidal 1H-indazole-4,7-diones and benzimidazole-4,7-diones. 3,780,055, Cl. 260-309.000.

Enviro-Acoustic R & D Inc.: *See—*
Hoffman, Edward H.; and Kennedy, Clifford F., 3,779,340.

Environmental Metrology Corporation: *See—*
Brown, Verne R., 3,780,311.

Ercoli, Alberto; and Gardi, Rinaldo, to Warner-Lambert Company. 17-Butyrate, 21-ester derivatives of 6α, 9α-difuloro-prednisolone, compositions and use. 3,780,177, Cl. 424-243.000.

Erickson, Donald G.: *See—*
Wright, Bruce C.; and Erickson, Donald G., 3,778,986.

Erickson, Donald V.; and Palusky, Eugene L., to United States Steel Corporation. Bentonite binder composition. 3,779,782, Cl. 106-72.000.

Erickson, Raymond Curry, to Squibb, E. R., & Sons, Inc. Alpha-ureidocyclohexadienylalkylene carboxylic acids. 3,780,088, Cl. 260-468.00j.

Erlenbusch, Gary L.; Hansen, Calvin N.; and Mott, Richard H., to Du-Al Manufacturing Company. Automatic gate for hay bale accumulator. 3,779,402, Cl. 214-6.00b.

Esch, Robert L.; Arnold, William C.; Skelton, Billy K.; Saxon, Michael D.; Murphy, Jerome A.; and Jaques, Roy J., to Bendix Corporation, The. Tooling positioning drive system for automatic gaging and assembly machines. 3,778,880, Cl. 29-208.00c.

ESGE-Marby Gesellschaft mit beschrankter Haftung & Co., Firma: *See—*
Niemann, Heinz, 3,779,435.

Espey Mfg. & Electronics Corporation: *See—*
Saslow, Seymour; and Roberts, Jerome A., 3,779,233.

Esser, Paul: *See—*
Kuntz, Egon; Esser, Paul; and Muschelknautz, Egar, 3,778,907.

Essery, John Michael; and Cheney, Lee Cannon, to Bristol-Myers Company. 7-[D-(α-Amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido]-3-[5-(1-methyl-1,2,3-triazol -4-yl)carbonyl]-thiomethyl-3-cephem-4-carboxylic acids. 3,780,032, Cl. 260-243.00c.

Essex Chemical Corporation: *See—*
De Santis, G. William, 3,779,794.

Essex International, Inc.: *See—*
Preston, Jerome A., 3,779,991.

Esso Production Research Company: *See—*
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Esso Research and Company: *See—*
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Esso Research and Engineering Company: *See—*
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Cozewith, Charles; and Robison, Samuel B., 3,780,005.
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Kresge, Edward N.; and Baldwin, Francis P., 3,780,002.
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McDougall, Lee A.; Richards, Thomas E.; and Looney, James R., 3,779,935.
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Verdier, Claude H., 3,779,011.

Etes, Donald E., to Plas-Med, Inc. Operating boards. 3,779,211, Cl. 119-103.000.

Ethyl Corporation: *See—*
Berolnon, Charles R.; and Kao, James T. F., 3,780,162.
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Malec, Robert E., 3,780,145.
Shubkin, Ronald L., 3,780,128.
Vennard, William O.; and Wright, Jack C., 3,779,241.

Etter, Berwyn E. Machine mounted cutting torch. 3,779,533, Cl. 266-23.00t.

Ettischer, Helmut; Steisslinger, Kurt; and Huschle, Peter, to Eastman Kodak Company. Film movement preventing means for cameras. 3,779,145, Cl. 95-31.0fm.

Evani, Syamalarao; and Lalk, Robert H., to Dow Chemical Company, The. Thickened latex coatings with improved flow and leveling properties. 3,779,970, Cl. 260-29.6rw.

Evans, Arthur J.; and Morin, Joseph C., to Whitlock, Inc. Control valve for contaminant-laden gases. 3,779,280, Cl. 137-625.500.

Evans, David; and Simpson, Bowen, to International Nickel Company Inc., The. Distribution of pellets. 3,779,795, Cl. 117-100.00m.

Evans, Delme, to Lilly Industries, Limited. Erythromycin azine derivatives. 3,780,020, Cl. 260-210.00e.

Everson, Charles W.: *See—*
Danner, Wilson E.; Hammes, Paul A.; and Everson, Charles W., 3,780,192.

EVR Enterprises: *See—*
Pickstock, Barry Thomas; and Neale, Denis Manktelow, 3,780,222.

Ewald, Ronald F., to Seaquist Valve Company. Safety closure adaptor. 3,779,427, Cl. 222-153.000.

Ewing, Robert L., to Holophane Co., Inc. Door and hinge assembly. 3,778,932, Cl. 49-388.000.

Exner, Jurgen H.; Larsen, Eric R.; and Gunsher, Jeffrey A., to Dow Chemical Company, The. Halogenated carbonates as fire retardants for polyesters. 3,779,984, Cl. 260-457.00r.

Expando Products Company: *See—*
Triplett, Lee; and Peterson, Wilmer R., 3,779,105.

Faber, George E.; and Kates, Frank F., to Krun Corporation. Closed system internal combustion engine. 3,779,013, Cl. 60-278.000.

Fabrica de Sticlarie Turda: *See—*
Simonfi, Paul; and Cristea, Viorel, 3,779,734.

Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,779,317.
Livingston, William L., 3,779,318.

Fahnler, Friedrich: *See—*
Hechlhammer, Wilhelm; Schneider, Kurt; and Fahnler, Friedrich, 3,780,157.

Fairchild Industries, Inc.: *See—*
Freudenthal, Hugo D.; Townsend, Richard E.; Zawoiski, Peter K.; and Schatz, Edward, 3,779,911.

Falk, David O.: *See—*
Norton, Charles J.; and Falk, David O., 3,779,917.

Fant, William D., to Fibrous Glass Products, Inc. Molten metal filter. 3,779,389, Cl. 210-474.000.

Farr, Glyn Philip Reginald, to Girling Limited. Shoe-drum brakes. 3,779,348, Cl. 188-106.00a.

Farran, Charles F.; and Wolfarth, Eugene F., to Eastman Kodak Company. Color developer scavenger layer for diffusion transfer dye image-receiving elements and systems. 3,779,756, Cl. 96-29.000.

Farwell, Harry Russell: *See—*
Black, James A.; and Farwell, Harry Russell, 3,779,160.

Fastway Fasteners, Inc.: *See—*
Schuplin, Jerome T., 3,780,209.

Faulkner, Hubert D.; and Requa, Stanley D., to Recognition Equipment Incorporation. Bar/half-bar optical code reader. 3,780,270, Cl. 235-61.11e.

Fauri, Jose Ramon. Lamp shade. 3,780,287, Cl. 240-108.00d.

Feasey, Ronald George; and Rose, John Brewster, to Imperial Chemical Industries, Limited. Aromatic polymers with the ether groups. 3,780,000, Cl. 260-79.30m.

Federal Tool & Plastics: *See—*
Porcelli, John C., 3,779,429.

Fehling, Hans-Reinhard; Hase, Horst; and Kutzer, Hans-Joachim, to Didier-Werke A.G. Method of remelting a frozen metal plug in the ceramic nozzle of a metallurgical vessel. 3,779,742, Cl. 75-46.000.

Feiner, Alfred, to Strabag Bau-A.G. Dam having an internal apron and means for indicating leakage of apron. 3,779,022, Cl. 61-31.000.

Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung: *See—*
Ploetz, Theodor; and Solich, Edeltraud, 3,779,791.

Ferguson, Joseph B.: *See—*
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Ferrari, Rodolfo: *See—*
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Fessop, Thomas C., to Eastman Kodak Company. Web guiding apparatus. 3,779,439, Cl. 226-88.000.

Ffarrwaller, Erwin, to Sulzer Brothers Limited. Differential gear. 3,779,102, Cl. 74-713.000.

Fibrous Glass Products, Inc.: *See—*
Fant, William D., 3,779,389.

Fields, Murray E., to Honey Tien Products, Inc. Compositions of matter including dried honey. 3,780,185, Cl. 426-72.000.

Fierro Esponja S.A.: *See—*
Celada, Joan; MacKay, Patrick W.; and de la Pena, Ramon, 3,779,741.

Firestone, Raymond A.: *See—*
Christensen, Burton G.; and Firestone, Raymond A., 3,780,034.

Fischer, Artur; and Muller, Jean-Nicolas. Connector for fractured bones. 3,779,239, Cl. 128-92.0bc.

Fischer, Joseph: *See—*
Stiles, Claude J.; and Fischer, Joseph, 3,779,785.

Fisher, Frank G. Door construction. 3,778,934, Cl. 49-503.000.

Fisher, James Glenn, to NVF Company. Frame and jack assembly. 3,779,517, Cl. 254-134.000.

Fisk, Reginald C.; and Carver, Edgar B., to Norton Company. Method of making a metal impregnated grinding tool. 3,779,726, Cl. 51-295.000.

Fives Lille-Cail: *See—*
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, 3,779,275.

Fix, Sidney R.: *See—*
Buhrmann, Wayne H.; and Fix, Sidney R., 3,779,308.

Flangeklamp Corporation: *See—*
Sauer, Gale E., 3,778,947.

Flannery, John B., Jr.: *See—*
Haas, Werner E. L.; Flannery, John B., Jr.; Mechlowitz, Bela; and Adams, James E., 3,779,751.

Fleissner, Heinz, to Vepa Aktiengesellschaft. Apparatus for the treatment of permeable textile materials. 3,779,047, Cl. 68-5.00d.

Flexsteel Industries, Inc.: *See—*
Quakenbush, Howard M., 3,779,600.

Flint, Edward F. Dual beam radiometer for clear air turbulence measurement. 3,780,293, Cl. 250-339.000.

Florus, Hans-Jorg: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; Krohn, Hellmut; and Stein, Hermann, 3,779,331.

Flouret, George Rogelio, to Abbott Laboratories. Octapeptide intermediate to gonadotropin releasing hormone. 3,780,014, Cl. 260-112.500.

Fluder, Chester H.: *See—*
Myrent, Harry L.; and Fluder, Chester H., 3,779,086.

Flynn, John E., to GTE Sylvania, Incorporated. Lamp filament support means. 3,780,333, Cl. 313-274.000.

FMC Corporation: *See—*
MacHenry, Richard; and Chang, Pei Tsing, 3,779,704.
Mencacci, Samuel A., 3,779,292.
Roche, Joseph R.; and Bowen, Mat M., 3,779,264.
Rose, Boyd W.; and Bercovitz, John H., Jr., 3,779,159.
Wech, Robert J., 3,779,838.
Wenglar, Frank G., 3,779,511.
White, Daniel A., 3,779,139.

Foley, Lary L., to Clorox Company, The. Automatic dispensing apparatus. 3,778,849, Cl. 4-228.000.

Folger, Michael S.: *See—*
Majkpzak, Charles P.; and Folger, Michael S., 3,779,466.

Folkes, Hugh Lorain, to Dunlop Holdings Limited. Continuous curing apparatus. 3,779,684, Cl. 425-233.000.

Fonken, Gunther S.; Herr, Milton E.; and Murray, Herbert C., to Upjohn Company, The. Oxygenated polymethyleneimines. 3,780,022, Cl. 260-239.00b.

Fontaine, Louis: *See—*
Bayssat, Michel; Fontaine, Louis; and Grand, Marcel, 3,780,102.

Fonzi, Giorgio; Vargio, Silvio; and Giovanni, Sesto S., to Societa Italiana Resine S.I.R. S.p.A. Poromeric materials. 3,779,855, Cl. 161-159.000.

Ford Motor Company: *See—*
Halloway, Henry; and Logothetis, Eleftherios Miltiadis, 3,779,801.
Lawser, John J., 3,778,984.
Spahl, Edwin, 3,779,578.
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Fore, Sara P.; Hayner, Eric T.; and Dupoy, Harold P., to United States of America, Agriculture. Determination of residual solvent in oilseed meals and flours by a volatilization procedure. 3,779,066, Cl. 73-23.100.

Forkner, John H. Method of making expanded food products. 3,779,772, Cl. 99-86.000.

Formex Manufacturing, Inc.: *See—*
Alesi, John A., 3,779,687.

Forneris, John L.: *See—*
Dorler, Jack A.; Forneris, John L.; and Swietek, Donald J., 3,780,320.

Forschunginstitut fur Textillechnologie: *See—*
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Forst, Wilhelm: *See—*
Muller, Fritz; Stendenbach, Karl-Heinz; Kartlapp, Gerhard; Forst, Wilhelm; and Schrodter, Hermann, 3,780,164.

Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, to Esso Research and Engineering Company. Electronic measurement of end point of asphalt oxidation. 3,779,892, Cl. 208-6.000.

Forsythe, William R. Pipe joint tester. 3,779,068, Cl. 73-49.100.

Foster, Alliene Caraway. Suture package. 3,779,375, Cl. 206-63.300.

Foster Wheeler John Brown Boilers Ltd.: *See—*
Stevens, Kenneth, 3,780,257.

Fowler, Gerald, to British Leyland Truck & Bus Ltd. Panel spacing and holding clip. 3,778,958, Cl. 52-760.000.

Fox, Douglas J., to Singer Company, The. Thread trimming device for sewing machines. 3,779,189, Cl. 112-252.000.

Fox, Robert J.: *See—*
Rogers, Waldo I.; Fox, Robert J.; and Moulton, Eric W., 3,780,268.

Frank, Wolfgang: *See—*
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Frankenhauser, Georg, to Kraftwerk Union Aktiengesellschaft. Apparatus for locking stator winding conductors of turbogenerators in position. 3,780,325, Cl. 310-214.000.

Frankfurter Maschinenbau Aktiengesellschaft vormals Pokarny & Whittekind: *See—*
Magdhuber, Kurt; and Kattentidt, Hinrich, 3,779,675.

Franklin Manufacturing Company: *See—*
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Frechet, Daniel: *See—*
Allais, Andre; Nedeleo, Lucine; Guillaume, Jacques; and Frechet, Daniel, 3,780,061.

Frederickson, Arthur R.; and Morris, Arnold D. Charge accumulation gamma radiation detector. 3,780,304, Cl. 250-336.000.

Free, David, to Radiation Development Co., Ltd. Apparatus for treating wood chips with electrons. 3,780,305, Cl. 250-400.000.

Freeman, Gene G.: *See—*
Cummings, Alan F.; Binz, Ernest F.; and Freeman, Gene G., 3,780,375.

Freeman, George; and Freeman, Patricia V. Frame assembly kit. 3,778,915, Cl. 40-125.00r.

Freeman, Patricia V.: *See—*
Freeman, George; and Freeman, Patricia V., 3,778,915.

Freisberg, Karl-Otto: *See—*
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Frenken, Hans: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

Freudenthal, Hugo D.; Townsend, Richard E.; Zawoiski, Peter K.; and Schatz, Edward, to Fairchild Industries, Inc. Waste treatment apparatus. 3,779,911, Cl. 210-60.000.

Frey, Christoph, to Ciba-Geigy AG. Pyrazolone pigments. 3,780,057, Cl. 260-310.00a.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Schafstall, Heinrich Gunter; and Furste, Wolfgang Otto August, 3,779,865.

Friedling, Gerard; and Chuard, Marcel, to Technicair S.A. Method of and apparatus for cleaning gazes. 3,778,979, Cl. 55-227.000.

Friedman, Joseph, to Rockwell International Corporation. Catalytic method of producing high temperature gases. 3,779,009, Cl. 260-217.000.

Friedman, Paul: *See—*
Cutler, Lester M.; and Friedman, Paul, 3,779,238.

Friedrich, Heinz G., to Petro-Tex Chemical Corporation. Dehydrogenation process. 3,780,129, Cl. 260-683.003.

Friedsan, Josef: *See—*
Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, 3,779,518.

Fries, Walter; Bloching, Helmut; Rhld, Hilden; and Jung, Dieter, to Henkel & Cie G.m.b.H. Compositions useful in the aqueous cold-bleaching of textiles including optical brighteners. 3,779,931, Cl. 252-99.000.

Friesner, Charles E., to Industrial Plastic Specialties Company. Method for producing trim strip assembly. 3,780,152, Cl. 264-174.000.

Frohbach, Hugh: *See—*
Pressman, Gerald L.; Frohbach, Hugh; and Blake, David E., 3,779,166.

Frohberger, Paul-Ernst: *See—*
Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, 3,780,089.

Froid Industriel Brissonneau: *See—*
Girardin, Pierre, 3,779,036.

Fruth, Hans; and Godel, Wolfgang, to Siemens Aktiengesellschaft. Device for automatically switching a feed flow from one to the other of two parallel branch lines of an emergency cooling system, especially in nuclear reactors. 3,779,266, Cl. 137-110.000.

Fugate, Walter V. Soaker hose reel. 3,779,478, Cl. 242-86.000.

Fugitt, Ronald B.; Uhrich, Richard W.; and Held, Jimmy L., to United States of America, Navy. Remote control underwater observation vehicle. 3,780,220, Cl. 178-6.800.

Fuji Denki Seizo Kabushiki Kaisha: *See—*
Nitta, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, 3,780,349.

Fuji Photo Film Co., Ltd.: *See—*
Chiba, Toshio; Yonezawa, Teruhiko; Kobayashi, Jiro; and Akashi, Goro, 3,779,775.
Hasegawa, Fumio; Emoto, Takeo; and Kurihara, Satoshi, 3,779,767.
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Tamai, Yasuo, 3,779,639.

Fuji Photo Film Company, Ltd.: *See—*
Sato, Masamichi; and Takahashi, Isoji, 3,779,206.

Fujiki, Konoshuke; Inafuku, Katsuaki; Shimizu, Hiroshi; Shigematsu, Toshiharu; and Kumura, Kazumi, to Mitsubishi Chemical Industries, Limited. Prilled ammonium nitrate composition of improved anti-scattering properties. 3,779,821, Cl. 149-7.000.

Fujinami, Akira: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 3,780,090.

Fujisawa, Fumio; Takenoshita, Mitsuaki; Nakamura, Ichiro; and Yumino, Hiroshi, to Hitachi, Ltd. Hydraulic lift. 3,779,017, Cl. 60-413.000.

Fujitsu Limited: *See—*
Kurata, Takao; and Oritani, Atsushi, 3,780,317.

Fukuta, Kenji; Sekiguchi, Junichi; Miyashita, Rihei; Matsuzaki, Yoshihara; and Miura, Yoshihiro, to Industrial Science & Technology, Agency of. Method of and apparatus for automatic bag reversing. 3,779,432, Cl. 223-39.000.

Fuller, Glenn; and Toombs, Alfred John Lawrence, to Shell Oil Company. Thixotropic compositions. 3,779,723, Cl. 44-7.00c.

Fuller, Harlan I.: *See—*
Watson, Edwin B.; and Fuller, Harlan I., 3,779,225.

Fuller, John G., to Tyson, Ian. Collapsible protective structure. 3,779,259, Cl. 135-1.00c.

Fuller, Joseph C. Heat exchanger tube reamer and cleaning apparatus. 3,778,858, Cl. 15-104.10r.

Funai Electric Co., Ltd.: *See—*
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Furlong, Donn B.; Gobler, Harry W.; and Grotheer, Robert, to Ecodyne Corporation, mesne. Concrete cooling tower. 3,779,523, Cl. 261-111.000.

Furste, Wolfgang Otto August: *See—*
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Gachwend, Heinz Werner, to Ciba-Geigy Corporation. Isoquinobenzazepines. 3,780,043, Cl. 260-286.00r.

Gagle, Duane W.; Draper, Homer L.; and Bennett, Richard J., to Phillips Petroleum Company. Asphalt rubberizing compositions. 3,779,964, Cl. 260-28.5as.

Gagnon, Robert G., to United Aircraft Corporation. Digital anti-spin and anti-slide system for moving vehicles. 3,780,346, Cl. 317-5.000.

Gale, Frederick Henry; and Cooper, Roy David, to EMI-Varian, Limited. Electron discharge devices. 3,780,332, Cl. 313-252.000.

Gale, Richard M.; and Lively, David H., to Lilly, Eli, and Company. Dipeptide antibiotic and method for the production thereof. 3,780,016, Cl. 260-112.005.

Galloway Company: *See—*
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Galloway, Edwin J., to Galloway Company. Aseptic sample fitting. 3,779,082, Cl. 73-421.00b.

Games, John E., to United Aircraft Corporation. Resolution of a triangle from hypotenuse and one side. 3,780,280, Cl. 235-190.000.

Gan, Ramat: *See—*
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Gannaway, Paul Henry: *See—*
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Gannon, Mathew R. Adapters including electro-magnetic attaching means for use with extruders. 3,779,063, Cl. 72-253.000.

Garay, Fernando Creixell, to Hijos de Juan de Garay, S.A. Umbrella frame. 3,779,260, Cl. 135-20.00r.

Garcia, Paulina H.: *See—*
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Gardella, John M.; Ciavattoni, Anthony; and Ujvary, Joseph I., to Pennwalt Corporation. Dental unit. 3,778,903, Cl. 32-22.000.

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Gardi, Rinaldo; Brianza, Carate; and Castelli, Pier Paolo, to Warner-Lambert Company. 3-Enolethers of Δ⁵-3-keto-5α-steroids and process for their preparation. 3,780,072, Cl. 260-397.450.

Gardiner, Robert Archie, to Du Pont de Nemours, E. I., and Company. Alkylated methylenedianiline tars. 3,779,923, Cl. 252-50.000.

Gardner, Gary A.: *See—*
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Gartner, Joseph J. Internal combustion engine pollution control device. 3,779,221, Cl. 123-119.00b.

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Gathman, Albert: *See—*
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Gati, George. Knitting machine. 3,779,041, Cl. 66-14.000.
Gatti, Franco: *See—*
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Gatzke, Kenneth G., to Minnesota Mining and Manufacturing Company. Silver halide photographic elements containing removable antihilation layer. 3,779,771, Cl. 96-84.000.
Gay, James L., to Starline, Inc. Apparatus for handling rolled bales of hay. 3,779,208, Cl. 119-1.000.
Gay, Walter A.; and Raymond, Maurice A., to Olin Corporation. Method for preparing 3-fluorosalicylaldehyde. 3,780,110, Cl. 260-600.000.
Geary, Fred, to U.S. Industries, Inc. Conveyor speed monitor. 3,780,297, Cl. 250-231.00r.
Gegick, Charles, to Wean United, Inc. Roll positioning means for a rolling mill. 3,779,062, Cl. 72-244.000.
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Giebeler, Robert Henry, to Varian Associates. High power beam tube having depressed potential collector containing field-shaping probe. 3,780,336, Cl. 315-5.370.
Gigante, Ernesto Nesofsky. Modular furniture. 3,779,177, Cl. 108-114.000.
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Godines, Henri, to Creusot-Loire. Extrusion assembly. 3,779,521, Cl. 259-191.000.
Godley, Augustus P.; and Kruse, William E., to Raymond International, Inc. Pile installation. 3,779,025, Cl. 61-53.520.
Goeltz, Richard R.; Schumacher, Howard; and Roth, Albee, to Electrocardio Dynamics Inc. Method and system for automatic processing of physiological information in greater than real time. 3,779,237, Cl. 128-2.06a.
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Goodhart, Frank W.; and Draper, James Ronald, to Warner-Lambert Company. Tasteless methenamine mandelate. 3,780,170, Cl. 424-35.000.
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Goyffon, Roland Abel, to Manufacture de Fils Isoles Faurus (Mafit). Apparatus and method for manufacturing insulated conductive wires. 3,779,055, Cl. 72-46.000.
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Scanlon, Patricia M.; and Thunberg, Jon C., 3,780,100.
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Greber, Gerd; and Darns, Roland, to Ciba-Geigy Corporation. Process for the production of shapeable polymers containing COQ-silyl groups. 3,779,990, Cl. 260-47.0cp.
Green, Evert S. Planter irrigation system with sand drain. 3,778,928, Cl. 47-38.100.
Green, Robert H. Method of making a headwall. 3,779,021, Cl. 61-16.000.
Green, Stanley, to Lucas, Joseph, (Industries) Limited. Combined lens and reflector for a vehicle lamp. 3,779,629, Cl. 350-103.000.
Greenberger, Joseph Irwin, to Wean United, Inc. Coolant control for hot strip mill. 3,779,054, Cl. 72-13.000.
Greene, David, Associates, Limited: *See—*
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Gregory, Mercer Duane, to Continental Oil Company. Coalescence of water and oleophilic liquid dispersions by passage through a permeable, oleophilic liquid equilibrated, foam of polyurethane. 3,779,908, Cl. 210-23.000.
Gregory, William Henry. Vibrationless speaker assembly. 3,779,337, Cl. 181-31.00b.
Grein, Hermann, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Speed control linkage means for winding bobbins. 3,779,471, Cl. 242-18.0cs.
Greve, Gottfred, to A/S Hoyer-Ellefsen. Stationary storage and mooring plant resting on the bottom of the sea. 3,779,024, Cl. 61-46.000.
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Grimshaw, Norman C.; and West, Thomas G., to General Electric Company. Ballast apparatus for starting and operating arc lamps. 3,780,342, Cl. 315-173.000.
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Grunwald, John J.; Solminski, Leo J.; Landau, Adela; and Shah, Dilip G., to MacDermid Incorporated. Method of and composition for dissolving metallic copper. 3,779,842, Cl. 156-18.000.
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J. Method of making a laminated electrically heated window. 3,778,898, Cl. 29-611.000.
Gryaznov, Vladimir Mikhailovich; Mischenko, Alexandr Petrovich; Smirnov, Viktor Sergeevich; and Aladyshev, Sergei Ivanovich. Catalytic reactor designed for carrying out conjugate chemical reactions. 3,779,711, Cl. 23-288.00r.
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Guichet, Niles F. Dental clutch fabrication. 3,778,902, Cl. 32-20.000.
Guidosh, Edward F., to Westinghouse Electric Corporation. Electrical contact assembly. 3,780,239, Cl. 200.011.00b.
Guild, Charles L.; and Goodman, Willard B. Expansible mandrel employing leaf springs to bias its sections into its pile entering relationship. 3,779,026, Cl. 61-53.720.
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Gunlock, Theodore. Light gauge for identifying plants that can grow in a particular location. 3,779,651, Cl. 356-213.000.
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Gutman, Arnold D., to Stauffer Chemical Company. Aryl-N-alkyl-carbamates. 3,780,091, Cl. 260-479.00c.
Gutman, Arnold D., to Stauffer Chemical Company. O-(4-Chlorobenzyl), S(propargyl)ethylphosphonodithioate. 3,780,143, Cl. 260-956.000.
Guy, Arthur L.; and Ruez, William J., III, to Esso Production Research Company. Tubular joint. 3,779,656, Cl. 403-4.000.
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Hadgraft, Robert B.; and Martin, John J., to Standard Brands Chemical Industries Inc. Textile laminating compositions and composite textile structures laminated therewith. 3,779,857, Cl. 161-88.000.
Hadley, Willis. Face fly screen. 3,778,966, Cl. 54-81.000.
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Haitz, Roland H., to Hewlett-Packard Company. Electroluminescent semiconductor display apparatus and method of fabricating the same. 3,780,357, Cl. 317-234.00r.

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Haller, Willi; Lebhere, Richard; and Kratt, Kurt, to Hengstler, J., KG, Firma. Device for controlling a self-service dispenser using identification data carriers. 3,779,357, Cl. 194-5.000.

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Halloway, Henry; and Logothetis, Eleftherios Miltiadis, to Ford Motor Company. High mobility epitaxial layers of PbTe and $Pb_{1-x}Sn_xTe$ prepared by post-growth annealing. 3,779,801, Cl. 117-201.000.

Hamill, Robert L.; Haney, Michael E., Jr.; and Stark, William Max, to Lilly, Eli, and Company. Antibiotic A477 and process for preparation thereof. 3,780,174, Cl. 424-118.000.

Hamilton, Donald N.; and Kennedy, Alexander W., to Diamond Shamrock Corporation. Applying chromic acid-amino acid, or lactam, or amide coating compositions to metals. 3,779,815, Cl. 148-6.200.

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Hamilton, William H.: *See—*
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Hammer, Clarence Frederick, to Du Pont de Nemours, E. I., and Company. Ethylene/carbon monoxide polymer compositions. 3,780,140, Cl. 260-884.000.

Hammes, Paul A.: *See—*
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Hancart, Jules; and Houbart, Ivan, to Centre National de Recherches Metallurgiques Centrum Voor Research in de Metallurgie. Preparation of pig iron samples for spectral analysis. 3,779,646, Cl. 356-74.000.

Handwerk, Richard Herman: *See—*
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Handzlik, Anthony T., to Vitter Manufacturing Corporation. Sealing means for an aperture in a panel or the like. 3,779,585, Cl. 285-158.000.

Haney, Michael E., Jr.: *See—*
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Hansen, Hans: *See—*
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Hansen, James H.; and Getz, Ralph W. High temperature-high strength alloy glass fiber forming bushing. 3,779,728, Cl. 65-1.000.

Hara, Shoji: *See—*
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Harada, Toshiaki: *See—*
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Hardemann, Manfred, to Steinmuller, L. & C., G.m.b.H. Combustion chamber. 3,779,180, Cl. 110-7.00r.

Hardinge Brothers, Inc.: *See—*
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Hardy Brothers (Alnwick), Limited: *See—*
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Harelson, Robert G., to Emerson Electric Co. Machine for winding foil ribbon coils. 3,779,474, Cl. 242-56.100.

Hari, Stefan; and Ronco, Karl, to Ciba-Geigy AG. Nickel complexes of dioximes and processes for their manufacture. 3,780,049, Cl. 260-299.000.

Hari, Stefan; and Ronco, Karl, to Ciba-Geigy AG. Process for the manufacture of 2,5-diacyl amino-1, 4 benzoquinones. 3,780,071, Cl. 260-396.00r.

Harman, Julius; and Norman, Michael Eric, to Herbert, Alfred, Limited. Lathes with chuck transfer mechanism. 3,779,110, Cl. 82-200.500.

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Harna, Hyacint E., to Zenith Radio Corporation. Air code burst generator. 3,780,213, Cl. 178-5.100.

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Harper, George S., to Airpax Electronics Incorporated. Dust seal high performance breaker. 3,780,249, Cl. 200-168.00g.

Harris, Martin: *See—*
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Hart, Porter, to Dow Chemical Company, The. Apparatus for continuous measurement and control of flotation conditions. 3,779,265, Cl. 137-93.000.

Harvey, Donald M., to Eastman Kodak Company. Self-processing film unit incorporating an integral battery. 3,779,143, Cl. 95-13.000.

Hase, Horst: *See—*
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Hasegawa, Fumio; Emoto, Takeo; and Kurihara, Satoshi, to Fuji Photo Film Co., Ltd. Color photographic developing method and developer therefor. 3,779,767, Cl. 96-66.00r.

Hasegawa, Toro: *See—*
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Haslam, Fred; Horsewell, Henry George; and Gannaway, Paul Henry, to Brown & Williamson Tobacco Corporation. Method for producing tobacco-smoke filters. 3,779,787, Cl. 117-11.000.

Hassell, Howard L., to Shell Oil Company. Method for separating nickel contaminant from hydrogenated conjugated diene polymers. 3,780,137, Cl. 260-880.00b.

Hassell, Howard L.; Watson, James C.; and Shaw, Benjamin W., to Shell Oil Company. Method for separating metal contaminant from organic polymers. 3,780,138, Cl. 260-880.00b.

Hatcher, Cecil W.; and Warner, Gene. Pavement cutting machine with improved liquid coolant supply. 3,779,606, Cl. 299-39.000.

Hatcher, Cecil W.; and Warner, Gene. Pavement cutting machine with selected drive system. 3,779,608, Cl. 299-39.000.

Hauck, Frederic D., to Eastman Kodak Company. Self-activating cutter for strip material. 3,779,641, Cl. 355-29.000.

Hawkins, Robert D. Deck hinge and locking apparatus for boats equipped with side decks. 3,779,197, Cl. 114-85.000.

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Hayden, Richard R.: *See—*
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Hayes, Leonard L., to Potlatch Forest Inc. Sheet material conveyor. 3,779,543, Cl. 271-75.000.

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Hazen, George G., to Merck & Co., Inc. Process for preparing cephalosporin compounds. 3,780,037, Cl. 260-243.00c.

Head, Norman Weldon, to Dresser Industries, Inc. Well tool and releasing device therefor. 3,779,314, Cl. 166-216.000.

Healy, Robert M.; and Hovey, Ralph J., to Bunker-Ramo Corporation, The. Contact element having noble wear area. 3,780,247, Cl. 200-166.00c.

Heberlein & Co., AG: *See—*
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Hechlhammer, Wilhelm; Schneider, Kurt; and Fahnler, Friedrich, to Bayer Aktiengesellschaft. Process for the production of reinforced polyamide hollow articles. 3,780,157, Cl. 264-310.000.

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Hedgepeth, Edward B. Sway control unit. 3,779,582, Cl. 280-446.00b.

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Heiser, Edward J., to Dow Chemical Company, The. Coatings containing plastic pigments. 3,779,800, Cl. 117-155.0ua.

Heit, Allyn H., to Sybron Corporation. Pentaerthritol purification process. 3,779,883, Cl. 204-180.00p.

Heitz, Charles T. Holder for flexible receptacle liners. 3,779,419, Cl. 220-63.00r.

Held, Jimmy L.: *See—*
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Henderson, Joseph D., to Telex Computer Products, Inc. Dual-tach capstan speed control. 3,780,364, Cl. 318-271.000.
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Hermann, Karl-Heinz, to Bayer Aktiengesellschaft. Process for the polymerization of lactams. 3,779,998, Cl. 260-78.001.
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Kerschner, Paul M., to Cities Service Company. Polybromocycloaliphatic ethers as flame retardant plasticizers. 3,779,978, Cl. 260-33.02r.

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Keuchel, Herbert W.; and Polestak, Walter J., to Celanese Corporation. Conjugate spinning process. 3,780,149, Cl. 264-186.000.

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Kibler, Charles J.; and Lappin, Gerald R., to Eastman Kodak Company. Polyesters and polyesteramides containing ether groups and sulfonate groups in the form of a metallic salt. 3,779,993, Cl. 260-75.00s.

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Kimura, Ryuichi, to Mikuni Kogyo K. K. Differential diaphragm carburetor. 3,779,529, Cl. 261-35.000.

King, Jack E. Post puller. 3,779,516, Cl. 254-30.000.

King, Lloyd H., Sr. Drainage valve structure. 3,779,276, Cl. 137-512.400.

King, Roger P., to Libby-Owens-Ford Company. Heat sink for tubular conveyor rolls. 3,779,735, Cl. 65-356.000.

Kinner, James L.: *See—*
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Kinney, Thomas D.; and Pickett, John E. P. Apparatus for embedding electron microscopy tissue. 3,779,681, Cl. 425-160.000.

Kirby, James D.; Hetzel, Douglas R.; McKay, Richard H.; Snydacker, James U.; and Ziebold, Paul G., to Thornber, Frank, Co. Electronic voting machine. 3,779,453, Cl. 235-54.00f.

Kirchgessner, Robert W., to Applied Communication Inc. Portable viewing theater. 3,779,634, Cl. 353-17.000.

Kirton, Joseph M. Locking finger sealed cap. 3,779,412, Cl. 215-9.000.

Kishi, Saburo: *See—*
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Kitamura, Kazuo; Takabayashi, Fumiki; and Yamada, Setsuo, to Teijin Limited. Process for dyeing fibers or fabrics of aromatic polyamides. 3,779,705, Cl. 8-173.000.

Kitamura, Shigeo; Nakamoto, Takatugo; Kaziura, Toshihiro; and Kurata, Shuichi, to Kanebo Ltd. Apparatus for centrifugal hydroextraction combined with oiling of textile pirns. 3,779,048, Cl. 68-150.000.

Kitaoka, Yoji: *See—*
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Klees, Garry W., to Boeing Company, The. Annulus inverting valve. 3,779,282, Cl. 137-625.460.

Kleigman, Jonathan Morris; and Barnes, Robert Keith, to Union Carbide Corporation. Glycolates from acetals. 3,780,087, Cl. 260-468.00k.

Klein, Gerald B. Flex tab for a gated can lid. 3,779,417, Cl. 220-27.000.

Klemm, Kurt, to BYK Gulden Lomberg Chemische Fabrik GmbH. Acylated anilino-carboxylic acids and their salts. 3,780,095, Cl. 260-518.00a.

Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., to Dayco Corporation. Method of continuously manufacturing flexible conduit. 3,779,846, Cl. 156-144.000.

Klockow, Michael: *See—*
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Knapp, Hans John. Continuous process for producing consolidated lignocellulosic material. 3,779,843, Cl. 156-64.000.

Knapp, Lester L.: *See—*
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Knaus, Ernest, to Goodyear Tire & Rubber Company, The. Fluid container. 3,779,420, Cl. 220-63.00r.

Knell, Martin, to Ciba-Geigy Corporation. Alkylhydroxybenzylamides. 3,780,103, Cl. 260-559.00a.

Knochel, William J.; Werner, Leo C.; and Lin, Francis C. M., to Westinghouse Electric Corporation. Apparatus and method for eliminating microcracks in alumina ceramic discharge devices. 3,780,331, Cl. 313-219.000.

Knudsen, Bjarne, to Rivenaes, Ivar. Cleaning internal combustion engines or the like. 3,779,213, Cl. 123-1.00r.

Kobayashi, Jiro: *See—*
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Kocher, Hans; and Schmid, Peter, to Societe Suisse pour l'Industrie Horlogere Management Services SA. Date-indicating device for a calendar timepiece. 3,779,001, Cl. 58-58.000.

Kodama Brothers Co., Ltd.: *See—*
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Koenen, Gunter; and Szczepanek, Alfred. Stabilizer-lubricant combinations for halogen-containing polymers. 3,779,962, Cl. 260-23.0xa.

Koepke, Gunther; Bardorff, Wolfgang Muller; Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Voss, Karl; Wasser, Willi; Browatzki, Kurt; and Friedsan, Josef, to Agfa-Gevaert Aktiengesellschaft. Continuous photographic emulsion processing. ,779,518, Cl. 259-18.000.

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Kondo, Fiji; Mitsugi, Takashi; and Tori, Kazuo, to Shionogi I. A., Ltd. Biochemical aldosierune synthesis. 3,780,026, Cl. 260-239.55r.

Kondo, Shigeru. Compression plate for osteosynthesis. 3,779,240, Cl. 128-92.00d.

Kondur, Nicholas, Jr.; and Kobylarz, Lawrence P., to Burroughs Corporation. Electromagnetic read/write apparatus for stationary cards. 3,780,264, Cl. 235-61.11d.

Konfino, Eliezer: *See—*
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Kono, Akiro; and Nozawa, Yoshiharu, to Vlvac Corporation and Research Development Corporation of Japan. Process for making a V_3 Ga superconductive composite structure. 3,778,894, Cl. 29-599.000.

Koomey, Paul C.; and De Vries, Douwe. Apparatus for making and breaking an electrical underwater connection between releasable underwater members. 3,780,243, Cl. 200-82.00r.

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Koren, Jan, 10% interest to Lee, Raymond, Organization, Inc., The. Slide rule for electronic analysis. 3,779,454, Cl. 235-70.00a.

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Korn, Roland; Seyd, Gunther; and Paulsen, Uwe, to Siemens Aktiengesellschaft. Method for decontamination of surfaces of nuclear reactor components. 3,778,938, Cl. 51-320.000.

Korom, Arpad, to U.S. Philips Corporation. Bistable multivibrator. 3,780,319, Cl. 307-288.000.

Korrenn, Heinz; Voll, Horst; and Grubel, Harald, to Schafer, Kugelfischer Georg, & Co. Astronomical telescope. 3,779,626, Cl. 350-85.000.

Kosar Golf Development Laboratory, Inc., The: *See—*
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Kott, Michael A., to AAI Corporation. Radiation sensitive hit detection arrangement. 3,780,300, Cl. 250-237.00r.

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Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber K.G. Device for spreading of the knitting on flat-bed knitting machines. 3,779,045, Cl. 66-147.000.

Krenke, Norman O.: *See—*
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Kreske, Alvin, Jr. Increased traction racing motor vehicle. 3,779,324, Cl. 180-1.00r.

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Kritzberg, Nathan I.; and Gardner, Richard, to Psychotherapeutic Devices, Inc. Psychological testing and therapeutic board game apparatus. 3,779,557, Cl. 273-135.00d.

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Kubek, Daniel John; Kosseim, Alexander Jean-Marie; and Somekh, George Solomon, to Union Carbide Corporation. Process for the separation of aromatic hydrocarbons from a mixed hydrocarbon feedstock. 3,779,904, Cl. 208-333.000.

Kubik, Peter Steve: *See—*
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Kucera, Clare H., to Dow Chemical Company, The. Acid composition and use thereof in treating fluid-bearing geologic formations. 3,779,915, Cl. 252-8.55c.

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Kuhn, Karl Walter. Device for interlinking the upper spring-caps of two mutually adjacent internal-combustion-engine valves. 3,779,217, Cl. 123-41.410.

Kulberg, Gerardus Huibrecht; and Deinert, Roedolf Hendrik, to Searle, G. D., & Co. Quench correction in liquid scintillation counting. 3,780,289, Cl. 250-362.000.

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Labbe, Francis Auguste Maurice, to Molins Machine Company, Limited. Cigarettes. 3,779,253, Cl. 131-110.000.

Labedan, Pierre; and Masotti, Robert, to PROGIL. Apparatus and method for cathode sputtering on the two sides of a metallic support having large dimensions. 3,779,885, Cl. 204-192.000.

Laboratorium fur Adsorptionstechnik GmbH: *See—*
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Lachmann, Hans-Peter, to Clouth Gummuwerke AG. Buffer or fender. 3,779,536, Cl. 267-140.000.

Lagain, Georges. Sheet material cutting apparatus. 3,779,121, Cl. 83-614.000.

Laing, Nikolaus. Cooling device for semiconductor components. 3,780,356, Cl. 317-234.00r.

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Landwer, Donald C.; and Lorenz, Allan A., to Teletype Corporation. Data transmitting systems. 3,779,321, Cl. 178-66.00r.

Lang, Jack H. Art paint saver. 3,779,369, Cl. 206-1.800.

Lang, Manfred, to Siemens Aktiengesellschaft. Holographic recording with two groups of differently oriented plane polarized object illumination beams. 3,779,625, Cl. 350-3.500.

Langager, Bruce A., to Minnesota Mining and Manufacturing Company. Poly(hexasubstituted melamines). 3,779,997, Cl. 260-77.50r.

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Langer, Herbert R.; and Langer, Arthur W., Jr. Process for reducing the fat content of meats. 3,780,191, Cl. 426-231.000.

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Lawser, John J., to Ford Motor Company. Gas liquid separator for use in a refrigeration system. 3,778,984, Cl. 55-333.000.

Lawson, Leslie Edward; and Smith, Peter John, to Howson-Algraphy Limited. Lithographic printing plates with lacquer of resole-epoxy resin combination. 3,779,759, Cl. 96-33.000.

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Lefforge, John William; and Keller, George Crawford, to Grace, W. R., & Co. Extruded disc gasket for alcoholic beverage bottle cpas. 3,779,965, Cl. 260-28.50b.

Legrandgerard, Jean Marcel, to ADAR (Hauts-de-Seine). Valves with replaceable packing. 3,779,271, Cl. 137-315.000.

Lehman, Ivan L., to International Equipment Company. Flexible shaft stabilizer. 3,779,451, Cl. 233-23.00a.

Lehmann, Hans-Jurgen: *See—*
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Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Mounting of very large tires. 3,779,301, Cl. 157-1.170.

Lemelson, Jerome H. Welding apparatus. 3,779,446, Cl. 228-15.000.

Lentz, Norman Eugene, to Bell Telephone Laboratories, Incorporated. Linear discharge circuit. 3,780,321, Cl. 307-304.000.

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Leroy, Pierre; Gombert, Marcel; Queuleu, Metz; and Sprunck, Emile, to Creusot-Loire a Societe Anonyme. Device for cooling a tuyere of a refining converter. 3,779,534, Cl. 266-41.000.

Lesher, Herbert, to Du Pont de Nemours, E. I., and Company. Tube and package making methods. 3,778,961, Cl. 53-28.000.

Leshin, Richard; and Cox, William L., to Goodyear Tire & Rubber Company, The. Process of preparing an amino thiazolyl disulfide using wet 2-mercaptobenzothiazole. 3,780,038, Cl. 260-247.001.

Lesser, Joseph H.: *See—*
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LeSuer, William M., to Lubrizol Corporation, The. Barium-containing dispersions and process. 3,779,922, Cl. 252-34.00f.

Levin, Gilbert V., to Biospherics Incorporated. Plastic moving-surface treatment of sewage. 3,779,906, Cl. 210-7.000.

Levin, Igor Anatolievich. Electric system of a device for deicing the surface of thinwalled structures. 3,779,488, Cl. 244-134.00a.

Levine, Arnold M., to International Telephone and Telegraph Corporation. Optical system for television camera. 3,780,224, Cl. 178-7.200.

Levine, Harold A.: *See—*
Gipstein, Edward; Hewett, William Ainslie; and Levine, Harold A., 3,779,806.

Levine, Melvin, to American Cystoscope Makers, Inc. Valve. 3,779,513, Cl. 251-309.000.

Levinson, Gerald S., to Shell Oil Company. Hydroconversion process with a catalyst having a hydrogenation component composited with a high density alumina. 3,779,903, Cl. 208-254.00h.

Lewis, Brynley; Miller, George Langham; Brooks, Kenneth John; and Goss, Arthur George, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in her Britannic Majesty's Government of the. Flame shield for a gas turbine engie. 3,779,006, Cl. 60-39.110.

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Lewis Industries, Inc.: *See—*
Lewis, Jerome A., 3,779,376.

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Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, to Johnson Service Company, Fives Lille-Cail and Installation for continuous ingot casting. Environmental air distribution control system powered by system pressure. 3,779,275, Cl.137-505.180 5'11/22/71 8'20.

Lhomore, Pierre; Cohen, Guy; and Jacquinot, Bernard, to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Process for producing nitroparaffins. 3,780,115, Cl. 260-644.000.

Li, Norman N.; Cahn, Robert P.; and Shrier, Adam L., to Esso Research and Engineering Company. Liquid membrane process for the separation of aqueous mixtures. 3,779,907, Cl. 210-22.000.

Libby-Owens-Ford Company: *See—*
King, Roger P., 3,779,735.
Swift, Howard R.; Soreghy, Ivan L.; Thacker, George N.; Thomas, Lazarus D.; Mattimoe, Paul T.; and Motter, Theodore J., 3,779,878.

Licentia Patent-Verwaltung G.m.b.H.: *See—*
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Daublebsky, Peter; and Zeitzschel, Gunter, 3,779,134.

Lidington, Frederick Charles, to Weathersheilds Limited. Sliding roofs and vehicles. 3,779,598, Cl. 296-137.000.

Liebman, Harmon L.; and Liebman, Shirley A., to Armstrong Cork Company. Poly (vinyl chloride) monopolymer composites-freeze-dry technique for preparation. 3,779,980, Cl. 260-34.002.

Liebman, Shirley A.: *See—*
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Lilly, Eli, and Company: *See—*
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Gale, Richard M.; and Lively, David H., 3,780,016.
Hamill, Robert L.; Haney, Michael E., Jr.; and Stark, William Max, 3,780,174.
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Lilly Industries, Limited: *See—*
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Lilly Industries, Ltd.: *See—*
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Lin, Francis C. M.: *See—*
Knochel, William J.; Werner, Leo C.; and Lin, Francis C. M., 3,780,331.

Lin, Yeong S.; and Yao, Ying L., to International Business Machines Corporation. Threshold logic using magnetic bubble domains. 3,780,312, Cl. 307-88.01c.

Lind, Larry W., to Cubic Corporation. Apparatus for sensing embossed indicia. 3,780,265, Cl. 235-61.11c.

Lindblad, Stig Martin. Locking device for a winding up safety belt for vehicles. 3,779,479, Cl. 242-107.400.

Lindblom, Robert C.: *See—*
Camp, Carolyn J.; and Lindblom, Robert C., 3,779,982.

Lindstaedt, Horst Karl; and Webb, Edwin James, to Masson Scott Thrissell Engineering Limited. Curl corrector apparatus for operating on a continuous web. 3,779,138, Cl. 93-1.00r.

Linskey, John R. Smoker's pipe. 3,779,254, Cl. 131-198.00r.

Lipha Lyonnaise Industrielle Pharmaceutique: *See—*
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Litt, Arnold D.; and Engelhart, John E., to Esso Research and Engineering Company. Certain 2-(thiazol-2-yl)-3,5-dioxo-4-methyl - 1,2,4-thiadiazolidines. 3,780,051, Cl. 260-306.80f.

Littlehorn, John J., Jr. Portable ski lift drive mechanism. 3,779,171, Cl. 104-173.000.

Littlejohn, Callion. Units for connecting together successive ladder sections. 3,779,343, Cl. 182-163.000.

Litton Systems, Inc.: *See—*
Crapuchettes, Paul Wythe, 3,780,252.

Liu, Joseph K.; and Douek, Maurice, to Gulf Oil Canada Limited. Interpolymerization of ethylene with other vinyl monomers in aqueous emulsion. 3,779,992, Cl. 260-63.0uy.

Liuhanen, Heikki; and Kallio, Kauko, to Valmet Oy. Motor guard. 3,779,325, Cl. 180-1.00r.

Lively, David H.: *See—*
Gale, Richard M.; and Lively, David H., 3,780,016.

Livingston, William L., to Factory Mutual Research Corporation. Method of fire protection utilizing independently operable discharge heads. 3,779,317, Cl. 169-1.00a.

Livingston, William L., to Factory Mutual Research Corporation. Discharge head for discharging fluid in two discharge patterns and fire protection system incorporating said head. 3,779,318, Cl. 169-1.00b.

Ljungkull, Gunnar R.: *See—*
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Lobach, Mark Iosifovich: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.

Local Industries Limited: *See—*
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Loftfield, Richard E., to Diamond Shamrock Corporation. Electrolytic cell for the manufacture of oxyhalogens. 3,779,889, Cl. 204-268.000.

Logothetis, Eleftherios Miltiadis: *See—*
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Lohr, Herb R.; and Magos, Toby, Jr., to Akron Standard, division of Eagle-Picher, Industries, Inc. Building drum. 3,779,835, Cl. 156-417.000.

Lohr, James E., to Du Pont de Nemours, E. I., and Company. Primer composition containing epoxide resins, phenol formaldehyde resin, tetraalkyl silicates, and silane coupling agents. 3,780,132, Cl. 260-831.000.

Lombardo, Joseph S., Sr. Quick detachable seat for automobile. 3,779,503, Cl. 248-429.000.

Long, Henry B.: *See—*
Hope, Richard P.; and Long, Henry B., 3,779,367.

Longpre, Mose Walter. Belly protective pan for tractor engine. 3,779,330, Cl. 180-69.100.

Lonning, Thor J. G., to Monsanto Company. Vinyl halide resin compositions containing ABS and MBS graft polymers. 3,780,134, Cl. 260-876.00r.

Loomans, Bernard A., to Baker Perkins Inc. Coupling structure for twin mixer shafts. 3,779,522, Cl. 259-192.000.

Looney, James R.: *See—*
McDougall, Lee A.; Richards, Thomas E.; and Looney, James R., 3,779,935.

Lord, John Garvin, to Cotton, Incorporated. Method of making a durable press garment. 3,778,913, Cl. 38-144.000.

Lorenz, Allan A.: *See—*
Landwer, Donald C.; and Lorenz, Allan A., 3,779,321.

Lorenz, Jerome L., to Ranco Incorporated. Malfunction indicator for exhaust gas recirculation valve. 3,779,222, Cl. 123-119.00a.

Loriers, Jean; and Heindl, Rudolf, to Etablissement Public Agence Nationale de Valorisation de la Recherche. Vitreous compounds with bistable electrical characteristics. 3,779,948, Cl. 252-521.000.

Lotz, Walter: *See—*
Wisfeld, Werner; Wirth, Hans; Lotz, Walter; and Kratz, Alfred, 3,779,909.

Loukidis, Panayotis Coroneou. Self-controlled differential sectionaliser for the protection of low voltage electric power consumers. 3,780,348, Cl. 317-18.00d.

Lowrance, Byron R.: *See—*
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Luk Lamellen und Kupplungsbau GmbH: *See—*
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Lundin, Eva. Neck band. 3,778,847, Cl. 2-146.000.

Lybecker, Robert W.; and Wahrmund, Kermit A. Hydraulic driven piston pump. 3,779,671, Cl. 417-393.000.

Lynas, Robert M.: *See—*
Cornyn, William S., Jr.; Dier, Stephen A.; and Lynas, Robert M., 3,779,457.

Lyon, Robert J.: *See—*
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Lyytinen, Timothy J. W. Mobile hospital bathing unit. 3,778,848, Cl. 4-173.000.

Maas, Russell H.: *See—*
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MacDermid Incorporated: *See—*
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MacHenry, Richard; and Chang, Pei Tsing, to FMC Corporation. Method and apparatus for space dyeing strand material. 3,779,704, Cl. 8-149.000.

MacKay, Patrick W.: *See—*
Celada, Joan; MacKay, Patrick W.; and de la Pena, Ramon, 3,779,741.

MacNeil, John Harold, to Pisesky, Michael. Head brace for hockey players. 3,779,549, Cl. 273-1.00b.

Magdhuber, Kurt; and Kattentidt, Hinrich, to Frankfurter Maschinenbau Aktiengesellschaft vormals Pokarny & Whittekind. Drive system for a plurality of worm driven compressors. 3,779,675, Cl. 418-199.000.

Magos, Toby, Jr.: *See—*
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Mahan, John E., to Phillips Petroleum Company. Solid propellants. 3,779,824, Cl. 149-19.900.

Maier, Elmar, to Hilti Aktiengesellschaft. Nail holder for a setting device operated by explosive force. 3,779,373, Cl. 206-560.00f.

Maierson, Theodore, to National Cash Register Company, The. Method of making container opening structure comprising flexible tape and pressure-rupturable capsule. 3,779,848, Cl. 156-178.000.

Mail Express, Inc.: *See—*
Kavanaugh, Daniel E., Jr., 3,779,405.

Main, Peter George, to Sperry Rand Australia. Identification of signalling lines by scanning. 3,780,229, Cl. 179-18.0ff.

Maisner, Leonard S., to Chase, W. M. Company. Corrosion resistant thermostatic laminate. 3,779,718, Cl. 29-195.500.

Majkpzak, Charles P.; and Folger, Michael S., to International Telephone and Telegraph Corporation. Method of producing a nozzle for a turbogenerator. 3,779,466, Cl. 239-489.000.

Makinen, Alpo Eino. Method for the impregnation and surface treatment of porous board type products. 3,779,797, Cl. 117-116.000.

Mal, N. Kumar: *See—*
Ellis, John L.; Mal, N. Kumar; and Tarkan, Stuart E., 3,779,720.

Malcolm, George D. Suspension systems. 3,779,576, Cl. 280-124.00b.

Malec, Robert E., to Ethyl Corporation. Triphenyl phosphates. 3,780,145, Cl. 260-966.000.

Mallory, P. R., & Co. Inc.: *See—*
Stafford, Richard W.; and Schuder, Maurice E., 3,780,240.

Malmin, Oscar. Hanger form. 3,779,434, Cl. 223-88.000.

Malone, Carl L., to AFA Corporation of Florida, The. Manually actuated liquid spraying device. 3,779,464, Cl. 239-350.000.

Maloney, Albert L.; and Maloney, Holly H. Oral hygienic device. 3,779,256, Cl. 132-93.000.

Maloney, Holly H.: *See—*
Maloney, Albert L.; and Maloney, Holly H., 3,779,256.

Manceau, Marcel. Control equipment for an injection moulding machine. 3,779,680, Cl. 425-145.000.

Mangham, Jesse Roger: *See—*
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Mann, Roger H.: *See—*
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Manning, Harold E., to Petro-Tex Chemical Corporation. Oxidative dehydrogenation in the presence of crystalline, Provoskite type manganese compounds. 3,780,126, Cl. 260-680.00d.

Manning, John C.; and Manning, Mark T. Seismically sensitive safety device. 3,779,262, Cl. 137-38.000.

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Mao, George W., to Gould, Inc. Method of making mold for forming objects. 3,779,816, Cl. 148-6.300.

Mara, Glenn L.; and McMaster, Robert C., to United States of America, Atomic Energy Commission. Method for producing spike-free electron beam partial penetration welds. 3,780,256, Cl. 219-121.0er.

Marathon Oil Company: *See—*
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Argabright, Perry A.; and Presley, C. Travis, 3,779,968.
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Norton, Charles J.; and Falk, David O., 3,779,917.

Maravetz, Lester L., to Esso Research and Engineering Company. Herbicidal N-(2-picolyl) substituted 2,6-dinitroanilines. 3,780,046, Cl. 260-294.80f.

Marberg, Bruce W. Stake pocket tie down insert. 3,779,502, Cl. 248-361.00r.

Marcona Corporation: *See—*
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Marcus, Seymour A.: *See—*
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Marechal, Freddy; and Lefebvre, Henri, to Solvay & Cie. Process for producing adiponitrile by dimerization on an amalgam. 3,780,086, Cl. 260-465.80a.

Marforio, Nerino, to S.p.A. Virginio Rimoldi & C. Air-cooled sewing machine. 3,779,188, Cl. 112-218.00r.

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Rowland-Hill, Edward William; and Margerum, Edwin O., 3,779,251.

Marion, Thomas E.; and Collins, Richard D., to Maryland Cup Corporation. Method and apparatus for securing a closure member within a container. 3,779,191, Cl. 113-120.00k.

Markova, Viktoria Vladimirovna: *See—*
Anikeev, Konstantin M.; Babitsky, Boris Davidovich; Verblovsky, Alexei Matveevich; Kozhenets, Tamara Nikolaevna; Kormer, Vitaly Abramovich; Lobach, Mark Iosifovich; Markova, Viktoria Vladimirovna; and Rivin, Ervin Mikhailovich, 3,780,078.

Marois, Jules. Fire-insulated partition and fireproof container made therewith. 3,779,179, Cl. 109-33.000.

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Martin, Francis J.: *See—*
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Martin, Gerald; Baccus, James A.; and Gurman, Marvin, to Holiday Recreation Products, Inc. Manually propelled water craft. 3,779,202, Cl. 115-22.300.

Martin, John J.: *See—*
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Martin, Rex. Electrical switches. 3,780,248, Cl. 200-167.00a.

Martin, Richard W. Glass pane fastening. 3,778,956, Cl. 52-758.00d.

Martin, Waylan C. Water treatment. 3,779,913, Cl. 210-63.000.

Martin, William J.: *See—*
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Martinez, Felix Jesus, to Baxter Laboratories, Inc. Bubble trap for removal of bubbles from biological fluids under sterile conditions. 3,778,973, Cl. 55-199.000.

Marubishi Yuka Kogyo Kabushiki Kaisha: *See—*
Ogawa, Yoshikatsu; Hisada, Haruhiko; and Kasahara, Takeshi, 3,780,142.

Maruoka, Hiroyuki, to Nissan Motor Company, Limited. Exhaust gas treating system for internal combustion engine. 3,779,015, Cl. 60-286.000.

Maruoka, Hiroyuki, to Nissan Motor Company, Limited. Vehicular air-pollution preventive apparatus. 3,779,349, Cl. 192-.092.

Maryland Cup Corporation: *See—*
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Maslowski, Stefan: *See—*
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Mason, Lowell M., to General Electric Company. Apparatus and method for performing manufacturing operations in an article of manufacture. 3,778,889, Cl. 29-596.000.

Masonite Corporation: *See—*
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Matramatic Company Limited: *See—*
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Matteson, Lucius G.; and Carlson, Norman R., to Westinghouse Electric Corporation. Modification and improvement to dynamic BOF control. 3,779,744, Cl. 75-60.000.

Mattimoe, Paul T.: *See—*
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Maucher, Paul, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch, especially for motor vehicles. 3,779,353, Cl. 192-70.000.

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Maurer, Karel; and Benda, Ladislav, to Tesla narodni Podnik. Heating apparatus for plastic extruders. 3,780,200, Cl. 13-23.000.

Mawhy, Roger Frederick, to C.I.T. Ralphs Limited. Adhesive applicator. 3,779,426, Cl. 222-146.000.

Mayer, Oscar, & Company, Inc.: *See—*
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Mayer, Robert A., Jr. Boundary layer control means. 3,779,199, Cl. 115-14.000.

Mayle, Alfred J., to Computer Power Systems Inc. High speed switching circuit for driving a capacitive load. 3,780,339, Cl. 315-27.0td.

Mazor, Sylvester S., to TRW Inc. Steering system with integral shock damper. 3,779,575, Cl. 280-95.00r.

McArthur, Colin S.: *See—*
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McCabe, James L.: *See—*
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McCoy, David L. Kite parachute dolly. 3,779,491, Cl. 244-155.00r.

McCoy, Roger W.: *See—*
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McCrossen, Fred C.; and Osborn, Harland J., to Eastman Kodak Company. Silver halide emulsions containing coupler solvents. 3,779,765, Cl. 96-56.500.

McCullough, Gerald W. Perforated composite bandage. 3,779,242, Cl. 128-171.000.

McDaniel, Augustus C., Jr.: *See—*
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McDougall, Lee A.; Richards, Thomas E.; and Looney, James R., to Esso Research and Engineering Company. Inhibition of corrosion. 3,779,935, Cl. 252-149.000.

McGeary, Frank L.; and Zampetti, Patrick L., to Construction Specialties, Inc. Expansion joint seal. 3,779,660, Cl. 404-69.000.

McKay, Richard H.: *See—*
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McKenney, Neal D.; and Dennis, John, Jr. Charcoal igniting apparatus. 3,779,693, Cl. 431-327.000.

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McNeil Corporation: *See—*
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McWilliams Joseph E. Apparatus for loading mail bags into a highway vehicle. 3,779,404, Cl. 214-41.000.

Mears, David E. Hydrogenation of aromatic hydrocarbon. 3,779,899, Cl. 208-143.000.

Measurex Corporation: *See—*
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Medow, Robert S. Adjustable prefabricated entryway. 3,778,945, Cl. 52-217.000.

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Meier, Eugen. Measuring apparatus including improved string mounting means. 3,779,072, Cl. 13-141.00p.

Meissner, Hans-Jurgen: *See—*
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Norback, Per Gunnar. Method of fabricating a laminated wheel-like body for the transfer of thermodynamic characteristics between two fluid streams. 3,778,874, Cl. 29-157.30r.
Norco Inc.: *See—*
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Norie, Susan Grace. Bathing cap. 3,778,846, Cl. 2-68.000.
Norman, Harry H., 1/2 to Baliski, Staphen. Spring forming apparatus. 3,779,058, Cl. 72-66.000.
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Nosco, Louis C.; and Ryan, James E., to Eastman Kodak Company. Document holder exchange apparatus. 3,779,644, Cl. 355-75.000.
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Olson, Earl Herbert, to Du Pont de Nemours, E. I., and Company. Crimpable copolyamide filaments. 3,779,859, Cl. 161-173.000.
Olson, Raymond L.; and Yone, Harold R., to Barber-Colman Company. Method for doffing a bobbin and forming a transfer tail. 3,778,996, Cl. 57-156.000.
Olsson, Robert G.; and Turkdogan, Ethem T., to United States Steel Corporation. Continuous casting with in-line stream degassing. 3,779,743, Cl. 75-49.000.
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Oshida, Otto A.; and Shawgo, Michael, to Grefco, Inc. Thermal and acoustical structural insulating composition. 3,779,860, Cl. 162-129.000.
Ostenberg, Ramon K.; and Case, Richard P., to Franklin Manufacturing Company. Washing machine. 3,779,090, Cl. 74-81.000.
Ostertag, Karl; Nilgens, Heinrich; and Scheiber, Herbert, to Akzona Incorporated. Apparatus for the continuous heat treatment of running yarns. 3,778,909, Cl. 34-155.000.
Ostroski, Richard J., to Black and Decker Manufacturing Company, The. Method of producing double-insulated armature sub-assemblies. 3,778,892, Cl. 29-598.000.
Ostwald, Richard, to Smith, Gordon, & Co., Inc. Wheel mounting assembly. 3,779,579, Cl. 280-150.500.
O'Toole, John J., to Motorola, Inc. Signal processing circuit. 3,780,219, Cl. 178-5.4he.
Otsuboj, Minoro. Slide attachment with a sounding mechanism. 3,779,637, Cl. 353-120.000.
Otsuka, Hitoshi; Nohmi, Kazumasa; and Hommo, Masao, to Matsushita Electronics Corporation. 40 Watt fluorescent lamp. 3,780,329, Cl. 313-185.000.
Otsuka, Hitoshi; Nohmi, Kazumasa; and Hommo, Masao, to Matsushita Electronics Corporation. 20 Watt fluorescent lamp. 3,780,330, Cl. 313-185.000.
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Pahl, Leo F.; and Jones, Norman H., to Crown Cork & Seal Company, Inc. System for carbonating beverages. 3,780,198, Cl. 426-477.000.

Palau, Joseph, to Staubli Ltd. Connection between frame and power transmitting rod of a shedforming machine. 3,779,287, Cl. 139-88.000.

Palmaer, Karl V. General purpose tracks. 3,779,617, Cl. 305-38.000.

Palmenberg, Edward C., to Chromalloy American Corporation. Buttress twist gage. 3,778,906, Cl. 33-174.00p.

Palmer, Oskar. Apparatus for production of concrete reinforcement lattice. 3,779,445, Cl. 228-5.000.

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Pansky, Emil J.; and Dean, Donald G., to Whittaker Corporation. Wheel and alignment assembly. 3,779,610, Cl. 301-9.00n.

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Patmore, Edwin L.; Oberender, Frederick G.; and Reed, David D., to Texaco Inc. Synthetic aircraft turbine oil. 3,779,921, Cl. 252-33.600.

Patterson, Richard A., to United Seal Company, The. Flexible strap-type seal having enclosed locking means. 3,779,589, Cl. 292-317.000.

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Pearson, Theodore A. Plant grow guide. 3,778,929, Cl. 47-58.000.

Pease, Theodore J. Mobile snow working apparatus with adjustable height flailer. 3,779,319, Cl. 172-45.000.

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Peterson, Lonn M. Live-bait fish-hook. 3,778,921, Cl. 43-44.800.

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Phelps, William D., to Phelps-Davis, Inc. Peacan cleaner. 3,779,377, Cl. 209-36.000.

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Phillips, Michael; and Jurow, Victor A., to Dreyfus, L. A. Company. Mechanized gum base pan unloader. 3,779,410, Cl. 214-311.000.
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Pickerell, Fred T.; and Brignola, Dominic J., to West Company, The. Primary nurser assembly. 3,779,413, Cl. 215-11.00c.
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Pickstock, Barry Thomas; and Neale, Denis Manktelow, to EVR Enterprises. Electronic weave compensation. 3,780,222, Cl. 178-7.200.
Piech, Ferdinand; and Schmitt, Sepp, to Porsche, Dr.-Ing. H.c.F., KG. Method and apparatus for mixture preparation of internal combustion engines. 3,779,223, Cl. 123-122.00d.
Pierce, Harold C. Boxed produce carloading. 3,779,173, Cl. 105-369.00s.
Pietryka, Joseph: *See—*
Ley, Ralph M.; Alyea, Harold M.; Holloway, Thomas M.; and Pietryka, Joseph, 3,779,275.
Pillon, Daniel; Poignant, Pierre; and Caffiero, Rudolphe, to PERRO, Societe pour de Developpment et la Vente de Specialities Chimiques. Herbicidal para-tert-butylphenyl urea. 3,779,738, Cl. 71-120.000.
Pinnow, Douglas Arthur; and Van Uitert, Le Grand Gerard, to Bell Telephone Laboratories, Incorporated. Optical elements utilizing fluorinated polymers. 3,779,627, Cl. 350-96.0wg.
Pinten, Peter; Weissenfels, Franz; and Junger, Hans. Method of making phenolic resin foams. 3,779,959, Cl. 260-2.50f.
Piretti, Giancarlo, to Anonima Castelli s.a.s. di Casare Castelli & C. Folding table. 3,779,176, Cl. 108-112.000.
Pirnie, Robert M., III: *See—*
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Pirnie, Robert M., Jr.; and Pirnie, Robert M., III, to Communication Equipment & Contracting Co., Inc. Telephone call answering and allotting transfer system. 3,780,227, Cl. 179-6.00c.
Pirooz, Perry P., to Owens-Illinois, Inc. Glass-ceramic and for making same. 3,779,856, Cl. 161-164.000.
Pisesky, Michael: *See—*
MacNeil, John Harold, 3,779,549.
Pisoni, Ottorino. Automatic rotary machine for continuously molding and pressing soap cakes. 3,779,685, Cl. 425-236.000.
Pitney Bowes, Inc.: *See—*
Ignatuev, Vladimir, 3,779,584.
Plambeck, Peter J.: *See—*
Clark, Eugene V.; Martin, William J.; Plambeck, Peter J.; and Commanday, Maurice R., 3,779,719.
Plant, Howard L.: *See—*
Bruson, Herman A.; and Plant, Howard L., 3,780,117.
Plas-Med, Inc.: *See—*
Etes, Donald E., 3,779,211.
Plasser, Franz; and Theurer, Josef. Control for the lateral adjustment of a track working tool assembly. 3,779,170, Cl. 104-12.000.
Plevin, Harold, to Harnden, C. A., Limited. Slitting and rewinding machine. 3,779,475, Cl. 242-56.200.
Ploch, Siegfried; Scholtis, Walter; Zschunke, Heinz; and Scharch, Dieter, to Forschunginstitut fur Textillechnologie. Textile fabric and method of producing same. 3,779,852, Cl. 161-62.000.
Ploetz, Theodor; and Solich, Edeltraud, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Method of heating paper. 3,779,791, Cl. 21-58.000.
Pogonowski, Ivo C.; and Carmichael, Paul D., to Texaco Inc. Protection against sheet ice at an offshore structure. 3,779,019, Cl. 61-1.000.
Poignant, Pierre: *See—*
Pillon, Daniel; Poignant, Pierre; and Caffiero, Rudolphe, 3,779,738.
Polanka, George J.: *See—*
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., 3,778,898.
Polanskyj, Bohdan S.; Solomon, Jack M.; Chisholm, Daniel R.; and Bluestein, Bernard R., to Witco Chemical Corporation. Continuous process for producing long chain amines. 3,780,107, Cl. 260-503.00r.
Polaroid Corporation: *See—*
Alston, William W.; Driscoll, John J.; and Wareham, Richard R., 3,779,770.
Bloom, Stanely M.; and Garcia, Paulina H., 3,779,752.
Bloom, Stanley M.; Idelson, Elbert M.; Simon, Myron S.; and Waller, David P., 3,779,753.
Idelson, Elbert M., 3,779,754.
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Paglia, Richard, 3,779,144.
Polestak, Walter J.: *See—*
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Policella, Henry. Fabric tensioning apparatus. 3,779,441, Cl. 226-111.000.
Polichette, Joseph, to Photocircuits Corporation. Photosensitive process for producing printed circuits employing electroless deposition. 3,779,758, Cl. 96-36.200.
Pollart, Dale F.: *See—*
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Pollet, Robert Joseph: *See—*
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Vanassche, Willy Joseph; Pollet, Robert Joseph; Borginon, Hendrik Alfons; and Pattyn, Herman Alberik, 3,779,776.
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Pollitzer, Ernest L., to Universal Oil Products Company. Alkylaromatic transalkylation utilizing alumina deficient mordenite. 3,780,122, Cl. 260-672.00t.
Pollock, E. Kears; and Umbel, Forrest K., to PPG Industries, Inc. Controlled glass manufacturing process. 3,779,731, Cl. 65-29.000.
Pond, Robert B., to Atom Manufacturing Co., Inc. Degassing apparatus for a fish aquarium or the like. 3,778,976, Cl. 55-206.000.
Pondelicek, William J.; and Schmidt, Vernon F., to Heich Die Casting Corporation. Apparatus for lubricating a die structure employed in die casting. 3,779,305, Cl. 164-312.000.
Poore, Ernest C.; and Goforth, John A., to Midwestern Specialties Ltd. Pipe handling method and apparatus. 3,779,696, Cl. 432-6.000.
Poppincer, Herbert; and Hubner, Klaus, to Siemens Aktiengesellschaft. Control circuit for an inverter including a controlled thyristor in an intermediate direct current circuit. 3,780,361, Cl. 318-171.000.
Porazinski, Robert F., to Bell & Howell. Film magazine with drive capstan. 3,779,484, Cl. 242-199.000.
Porcelli, John C., to Federal Tool & Plastics. Plastic dispensing nozzle with a ball valve. 3,779,429, Cl. 222-500.000.
Porret, Daniel; Habermeier, Juergen; and Batzer, Hans, to Ciba-Geigy AG. Adducts, containing opoxide groups, from polyepoxide compounds and binuclear N-heterrocyclic compounds. 3,779,949, Cl. 260-2.00n.
Porsche, Dr.-Ing. H.c.F., KG: *See—*
Piech, Ferdinand; and Schmitt, Sepp, 3,779,223.
Porter, Lawrence C.; and Graves, Kenneth E., to Upjohn Company, The. Digital method and system for material handling. 3,780,365, Cl. 318-318.000.
Poster, Maurice G. Hydrophilic lens holder. 3,779,648, Cl. 356-124.000.
Potlatch Forest Inc.: *See—*
Hayes, Leonard L., 3,779,543.
Potter, Ernest William: *See—*
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Powell, Mabrin P., to Champion International Corporation. Water-resistant microcapsular opacifier system and products. 3,779,941, Cl. 252-316.000.
Powell, Ronald C.: *See—*
Sanders, Vernard W.; and Powell, Ronald C., 3,779,590.
Powers, Kenneth W.: *See—*
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Poweska, Joseph V.; and Stoneham, Jeffrey R., to Sylvania Electric Products, Inc. Percussion-ignitable flash unit having contact-actuable pre-energized strikers and photographic apparatus using such units. 3,780,283, Cl. 240-1.300.
PPG Industries, Inc.: *See—*
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Pollock, E. Kears; and Umbel, Forrest K., 3,779,731.
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Argabright, Perry A.; and Presley, C. Travis, 3,779,968.
Presley, Rex W.: *See—*
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Pressman, Gerald L.; Frohbach, Hugh; and Blake, David E., to Electroprint, Inc. Electrostatic printing system and method using ions and toner particles. 3,779,166, Cl. 101-426.000.
Pressman, Gerald L.; and Kittredge, Thomas D., to Electroprint, Inc., mesne. Method and apparatus for single and multicopy CRT computer print-out. 3,780,376, Cl. 346-74.0cr.
Preston, Jerome A., to Essex International, Inc. Silicon-hydantoin-ester resins. 3,779,991, Cl. 260-46.50e.
Price, David D., Jr.: *See—*
De Bell, Lawrence R.; and Price, David D., Jr., 3,780,231.
Price, Raymond M.; and Reed, Russell. Abrasion resistant gas generating compositions for use in inflating safety crash bags. 3,779,823, Cl. 149-19.000.
Printed Motors, Limited: *See—*
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Privott, Wilbur J., Jr.; and Cunningham, Robert E., to Monsanto Company. Low viscosity melt spinning process. 3,780,153, Cl. 264-176.00f.

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Labedan, Pierre; and Masotti, Robert, 3,779,885.

Prognon, Pierre; Scuflaire, Robert; Mathey, Francois; and Gryszkiewic-Trochimowski, Oleg, to Azote et Produits Chimiques S.A. Alkylthiocarbonates of S-dialkylamino halotriazines. 3,780,036, Cl. 260-249.500.

Proops, William Robert: *See—*
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Prost, Roger: *See—*
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Psychotherapeutic Devices, Inc.: *See—*
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Pullakat, Thomas J.; and Shida, Mitsuzo, to Chemplex Company. Catalyst and catalytic process. 3,780,011, Cl. 260-94.90d.

Pullman Incorporated: *See—*
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Purdy, Frederick A. Garage door energy stored and employed. 3,778,930, Cl. 49-25.000.

Purex Corporation, Ltd.: *See—*
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Putman, Richard E. J., to Westinghouse Electric Corporation. Control system and method for a reversed ball mill grinding circuit. 3,779,469, Cl. 241-30.000.

QST Industries, Inc.: *See—*
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Quakenbush, Howard M., to Flexsteel Industries, Inc. Foldable arm rest assembly. 3,779,600, Cl. 297-417.000.

Queuleu, Metz: *See—*
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Quinn, Peter T.; and Schroeder, Bruce W., to Honeywell Inc. Photographic slide dispenser. 3,779,423, Cl. 221-186.000.

Raago, Rein, to Wagner Electric Corporation. Symbol display tube with auxiliary electrode. 3,780,326, Cl. 313-108.00r.

Rabin, Albert M., to Bell & Howell Company. Knife programmer. 3,779,114, Cl. 83-205.000.

Rabut, Eugene W., to Occidental Energy Development Company. Manifold system for electrical energy storage systems. 3,779,813, Cl. 136-161.000.

Race, Marlin L., to General Electric Company. Trash compactor having means facilitating trash removal therefrom. 3,779,156, Cl. 100-218.000.

Racine, William H. Tube end fitting. 3,779,587, Cl. 285-312.000.

Radiation Development Co., Ltd.: *See—*
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Radomski, Alfreda, to Warnaco, Inc. Brassiere. 3,779,250, Cl. 128-489.000.

Raesz, Reuben: *See—*
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Ramge, Dennis Lee, to Johns-Manville Corporation. Control for glass marble, feeding, melting and fiber forming unit. 3,779,730, Cl. 65-9.000.

Ramillon, Rene. Safety front jaw for ski bindings. 3,779,569, Cl. 280-11.35t.

Ramond, Jean: *See—*
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Rands, William Partington. Energy absorbing device. 3,779,591, Cl. 293-89.000.

Rankins, Everett V. Windrow rake opening device and one wheel tractor. 3,778,987, Cl. 56-377.000.

Ranz, Erwin; Schutz, Heinz-Dieter; Schellenberger, Hans; and Von Rintelen, Harald, to Agfa-Gevaert Aktiengesellschaft. Photographic process. 3,779,755, Cl. 96-27.00e.

Rapp, Charles F.: *See—*
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Ratie, Wilbert L., Jr., to Water Gremlin Company. Connectors. 3,778,871, Cl. 24-236.000.

Ratte, Patrice: *See—*
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Ravera, Giovanni; Cosmo, Nicola; and Siletto, Giorgio, to Olivetti, Ing. C. & S. S.p.A. Desk-top electrostatic copying machine. 3,779,638, Cl. 355-3.000.

Rawson, Edward B.: *See—*
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Raymon, Raymond T. Sliding panel lock. 3,779,588, Cl. 292-57.000.

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Raymond, Maurice A.: *See—*
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RCA Limited: *See—*
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Reagan, Donald W., to Singer Company, The. Circular knitting machines for producing a patterned fabric. 3,779,042, Cl. 66-5.0da.

Reckziegel, Erich: *See—*
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Redactron Corporation: *See—*
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Redmore, Derek; and Welge, Frederick T., to Petrolite Corporation. Water clarification process using silicon-containing aminomethyl phosphonates. 3,779,912, Cl. 210-54.000.

Redwanz, James O. Semiconductor interconnecting system using conductive patterns bonded to thin flexible insulating films. 3,780,352, Cl. 317-101.0cm.

Reed, David D.: *See—*
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Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., to Zink, John, Company. Method and apparatus for non-polluting combustion of waste gases. 3,779,689, Cl. 431-89.000.

Reed, Russell: *See—*
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Reeves, Hewett Maxwell, to Brown & Root, Inc. Electronic range measuring method and apparatus. 3,780,370, Cl. 343-17.700.

Regan, Albert Michael, to Regan Forge & Engineering Company. Releasable connecting apparatus for subsea wellhead. 3,779,313, Cl. 166-.600.

Regan Forge & Engineering Company: *See—*
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Regipa, Robert, to Centre National d'Etudes Spatiales. Positioning device for the edge of flexible films. 3,779,443, Cl. 226-199.000.

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Reis, Walter; Pfenning, Helmut; and Boll, Dietmar, said Pfenning, said Boll, assor to said Reis, Walter. Device for finishing complementary parts and testing the same. 3,779,067, Cl. 73-37.000.

Reiser, Kurt: *See—*
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Reisser, Vernon H. Vehicle wheel. 3,779,616, Cl. 305-19.000.

Reiter, John J. Clamp. 3,779,108, Cl. 81-424.000.

Rembold, Heinz; Baumann, Dieter; and Habermeier, Jurgen, to Ciba-Geigy Corporation. Polyepoxide-polysiloxane compounds, processes for their manufacture and their use. 3,779,988, Cl. 260-46.50g.

Renckhoff, Gustav: *See—*
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Reppel, Willi E., to Oliver Tire & Rubber Company. Apparatus for retreading tires. 3,779,830, Cl. 156-394.000.

Reppel, Willi E., to Oliver Tire & Rubber Company. Apparatus for retreading tires. 3,779,831, Cl. 156-394.000.

Reppel, Willi E., to Oliver Tire & Rubber Company. Method for retreading tires. 3,779,832, Cl. 156-96.000.

Reppel, Willi E., to Oliver Tire & Rubber Company. Apparatus for retreading tires. 3,779,833, Cl. 156-394.000.

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Rhyne, Johnathan L., 20% to Rhyne, Paul C., Jr. and Rhyne, Joseph M. Novelty yarn. 3,778,992, Cl. 57-139.000.

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Richards, Albert A. Wall anchor for electrical conduits. 3,779,495, Cl. 248-71.000.

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Riley, Robert E.; and Taub, James M., to United States of America, Atomic Energy Commission. Tantalum carbide-tantalum fiber composite material. 3,779,716, Cl. 29-182.800.

Riseley, Gerald Frederick, Jr. Restrained access protection apparatus. 3,779,178, Cl. 109-6.000.

Rist, Michel Theophill, to Societe Anonyme Francaise du Ferodo. Free-wheel mechanisms and free wheels incorporating such mechanisms. 3,779,350, Cl. 192-45.000.

Rister, Franklin D. Multi purpose ladder. 3,779,344, Cl. 182-214.000.

Ritter, Henry, to Avco Corporation. Mobile passenger loading lounge for aircraft. 3,779,596, Cl. 296-28.0al.

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Rocton, Lucien, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Connection device for submarine repeater. 3,780,210, Cl. 174-70.00s.

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Rogers, Waldo I.; Fox, Robert J.; and Moulton, Eric W., to Rusco Industries, Inc. Static card reader and control system for access apparatus. 3,780,268, Cl. 235-61.11d.

Rohm, Gunter Horst. Machinist vise. 3,779,538, Cl. 269-23.000.

Rohner, Thomas E. Electronic odometer and comparative rate indicator. 3,780,272, Cl. 235-150.002.

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Rose, Boyd W.; and Bercovitz, John H., Jr., to FMC Corporation. Egg marking apparatus. 3,779,159, Cl. 101-35.000.

Rose, John Brewster: *See—*
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Rosenfeld, Daniel D.; and Corbaty, Martin L., to Esso Research and Engineering Company. Methyl-3-hydroxymethyl-24-dioxo-1,3-dihydroquinazolines. 3,780,042, Cl. 260-260.000.

Rosenthal, Louis Aaron, to Union Carbide Corporation. Electrode method for the surface treatment of thermoplastic materials. 3,779,882, Cl. 204-165.000.

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Ross, Thorvald S., Jr.: *See—*
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Ross, Thorvald S., Jr.; and Entin, Leonard P., said Entin assor. to said Ross, Thorvald S., Jr. Receptacle for waste material. 3,779,157, Cl. 100-240.000.

Rossiter, Donald W. Hose coupling connect and disconnect mechanism. 3,779,586, Cl. 285-308.000.

Rossow, Rolf, to Otto, Dr. C., & Comp., G.m.b.H. Gaseous mixing device for regenerator heaters. 3,779,690, Cl. 431-173.000.

Roth, Albee: *See—*
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Rowland-Hill, Edward William; and Margerum, Edwin O., to Sperry Rand Corporation. Crop elevator for a combine. 3,779,251, Cl. 130-27.0jt.

Rudd, Robert L. Thermal bank. 3,780,262, Cl. 219-341.000.

Rudy, Erwin, to Aerojet-General Corporation. Carbide alloys suitable for cutting tools and wear parts. 3,779,745, Cl. 75-176.000.

Rudy, Erwin, to Aerojet-General Corporation. Carbide alloys suitable for cutting tools and wear parts. 3,779,746, Cl. 75-176.000.

Ruez, William J., III: *See—*
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Runck, Alan H.; and Valeri, Cesare Robert, to United States of America, Navy. Method and means for determining oxyhemoglobin association and dissociation curves of whole or other liquids. 3,779,708, Cl. 23-230.00b.

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Russell, George F. High efficiency heat transit system. 3,779,310, Cl. 165-105.000.

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Nosco, Louis C.; and Ryan, James E., 3,779,644.

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Rygg, Gregers G., to Avco Corporation. Integral multichannel separator. 3,778,983, Cl. 55-306.000.

Rygiol, Henry V. Multi-arc pipe welding. 3,780,254, Cl. 219-61.000.

Rymes, William H., to United States of America, Navy. Electronic counter-countermeasures system. 3,780,371, Cl. 343-18.00e.

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Sabet, Huschang. Intake and exhaust arrangement for a rotary-piston internal combustion engine. 3,779,215, Cl. 123-8.470.

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Saita, Toshikazu, to Mitsubishi Denki Kabushiki Kaisha. Device for controlling ignition timing of engine. 3,779,219, Cl. 123-117.00r.

Saito, Takashi: *See—*
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Sakakura, Shiro; and Ito, Naotake, to Brother Kogyo Kabushiki Kaisha. Apparatus for joining together two pieces of work fabric or similar materials. 3,779,185, Cl. 112-121.120.

Sakata, Masanobu; Kitaoka, Yoji; Itami, Nobuo; Tomoyasu, Yoshitada; Shibayama, Kazuhiko; Furutachi, Kunio; and Mineshima, Hideo, to Mitsui Shipbuilding and Engineering Co., Ltd. and Petrochemical Industries, Limited. Apparatus for burning high viscosity liuid fuels. 3,779,691, Cl. 431-190.000.

Sakurada, Ichiro; Okada, Toshio; and Shimano, Yasunao, to Japan Atomic Energy Research Institute. Radiation grafting of poly(ethylene glycol) dimethacrylate and other monomers onto polyester fibers. 3,779,881, Cl. 204-159.150.

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Salvati, John G.; Ricci, Louis N.; and Merola, Carl R., to Westinghouse Electric Corporation. Metal enclosed switchgear with J-shaped vertically disposed conductors. 3,780,355, Cl. 317-120.000.

Samour, Carlos M.; and Richards, Mildred C., to Kendall Company, The. Monomeric emulsion stabilizers. 3,780,092, Cl. 260-482.00r.

Sample, Thomas E., Jr.: *See—*
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Sanders, Sidney C.: *See—*
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Sanders, Vernard W.; and Powell, Ronald C., to Norris Industries, Inc. Non removable knob trim. 3,779,590, Cl. 292-336.300.

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Saslow, Seymour; and Roberts, Jerome A., to Espey Mfg. & Electronics Corporation. Speculum instrument with disposable forward section. 3,779,233, Cl. 128-6.000.

Sasse, Klaus: *See—*
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Sato, Aisuhiko. Finger-training apparatus. 3,779,548, Cl. 272-67.000.

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Sato, Masamichi; and Takahashi, Isoji, to Fuji Photo Film Company, Ltd. Apparatus for scraping liquid off of sheet material. 3,779,206, Cl. 118-63.000.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Method of charging in electrophotography. 3,779,749, Cl. 96-1.00c.

Sato, Yoshikazu; and Sato, Makoto. Tool changer for machine tool. 3,779,391, Cl. 211-1.500.

Satomi, Takeo: *See—*
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Sauer, Gale E., to Flangeklamp Corporation. Fire-rated grid member with controlled expansion means. 3,778,947, Cl. 52-232.000.

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Scanlon, Patricia M.; and Thunberg, Jon C., to Grace, W. R., & Co. Process for preparing chelating agents. 3,780,099, Cl. 260-534.00e.

Scanlon, Patricia M.; and Thunberg, Jon C., to Grace, W. R., & Co. Process for preparing chelating agents. 3,780,100, Cl. 260-534.00e.

Scaramucci, Domer. Stamped-disc butterfly valve. 3,779,512, Cl. 251-308.000.

Schaafsma, Sijbrandus E.; and Hofman, Johannes H. A., to Stamicarbon N.V. Preparation of cyanoalkane carboxylic acids. 3,780,084, Cl. 260-465.400.

Schack, Carl J.; and Wilson, Richard D., to North American Rockwell Corporation. Synthesis of chlorine fluorosulfate and bromine I fluorosulfate. 3,780,165, Cl. 423-466.000.

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Schere, Gerald F., to Owens-Illinois, Inc. Apparatus and method for linearizing the output of a normally nonlinear radio frequency thickness gauge. 3,779,378, Cl. 209-73.000.
Scherer, William S. Turbine powered surface vacuum cleaning device. 3,778,864, Cl. 15-339.000.
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Scheuerpflug, Hans, to Ditzingen, Johannes Fuchs, Firma. Vehicular suspension system. 3,779,581, Cl. 280-95.00r.
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Schimitschek, Erhard J.; and Trias, John A., to United States of America, Navy. Liquid laser solution formed with a neodymium salt in phosphorus oxychloride. 3,779,939, Cl. 252-301.40p.
Schipper, Dennis J.; Ried, Harold T.; and Rollins, Dallas W., to ACF Industries, Incorporated. Railway hopper car outlet. 3,779,172, Cl. 105-282.00p.
Schlaudroff, Leo M., to Kerr-McGee Chemical Corporation. Apparatus and method for precisely forming and placing insulation in the slots of magnetic cores. 3,778,890, Cl. 29-596.000.
Schleppnik, Alfred A., to Monsanto Company. 2-Alkyl-3-(2-norbornyl)-propanals. 3,780,109, Cl. 260-598.000.
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Schmidt, Richard. Variable speed transmission. 3,779,100, Cl. 74-665.00r.
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Screttas, Constantinos G., 1/2 to National Hellenic Research Foundation, The. Preparation of organolithium compounds. 3,780,045, Cl. 260-293.051.
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Shapiro, Leonard, to Pennwalt Corporation. Basket Centrifuge. 3,779,450, Cl. 233-21.000.
Shapland, Earle P., Jr., to United States Steel Corporation. Operating mechanisms and method for slidable-gate closures. 3,779,424, Cl. 222-1.000.
Sharkitt, Patrick J.; and Hayden, Richard R., to Sigma Systems, Inc. Error checking code and apparatus for an optical reader. 3,780,271, Cl. 235-61.11e.
Sharp, William T., to General Electric Company. Vacuum type circuit breaker comprising series-connected vacuum interrupters, individual ones of which are readily removable and replaceable. 3,780,354, Cl. 317-103.000.
Shavel, John, Jr.: *See—*
Klutchko, Sylvester; Shavel, John, Jr.; and von Strandtmann, Maximilian, 3,780,060.
Shaver, Robert G., to Atlantic Research Corporation. Nitrocellulose propellent compositions containing inorganic oxidizing agents with aluminum. 3,779,826, Cl. 149-20.000.
Shaw, Benjamin W.: *See—*
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Shibata, Akira; and Oguino, Masanori, to Hitachi, Ltd. Circuit for compensating sharpness of picture in color television receiver. 3,780,215, Cl. 178-5.40r.
Shibata, Shotaro: *See—*
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Shields, Michael A.; and Andrews, Robert W., to Signetics Corporation. Semiconductor structure with fusible link and method. 3,778,886, Cl. 29-577.000.
Shigematsu, Toshiharu: *See—*
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Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, to Teijin Limited. Process for catalytic intra-molecular rearrangement of dimethyl naphthalene. 3,780,119, Cl. 260-668.00a.
Shimamoto, Susumu: *See—*
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Shoemaker, Carlyle E., to Bethlehem Steel Corporation. Method for preventing the formation of rust on the surface of coiled steel strip and an inhibitor for accomplishing same. 3,779,818, Cl. 148-6.14r.
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Shupe, David M., to Bendix Corporation, The. Optical correlator having a dye amplifier for amplifying correlating portions of signal. 3,779,631, Cl. 350-162.0sf.
Siagel, Robert Clayton; and Bloomquist, Arnold Eugene, to Calgon Corporation. Friction reducing in flowing hydrocarbon fluids. 3,779,969, Cl. 260-29.60e.
Siedman, Russell F., to Universal Oil Products Company. Adding corrosion inhibitor to top of crude oil still. 3,779,905, Cl. 208-348.000.
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Simonson, Harris J., to Comsec Corporation. Timeclock surveillance system. 3,780,378, Cl. 346-107.00r.
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Sioui, Richard H.; and Cohen, Harvey M., to Norton Company. Resin-bonded abrasive tools with metal fillers. 3,779,727, Cl. 51-298.000.

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Smith, Don W., to CMI Corporation. Curb slip form apparatus. 3,779,662, Cl. 404-98.000.

Smith, Duaine E. Storage receptacle-bondler assembly. 3,779,152, Cl. 100-34.000.

Smith, Edwin Studley; and Glazer, Emmett J., to Goodyear Tire & Rubber Company, The. In situ initiator polymerization of vinyl chloride. 3,780,008, Cl. 260-92.80w.

Smith, George H.; and Bonham, James A., to Minnesota Mining and Manufacturing Company. Photosolubilizable compositions and elements. 3,779,778, Cl. 96-115.00r.

Smith, Gordon, & Co., Inc.: *See—*
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Smith, Harry D., Jr.: *See—*
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Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., to Texaco Inc. Pulsed neutron logging systems for detecting gas zones. 3,780,301, Cl. 250-301.000.

Smith, Harry D., Jr.; Arnold, Dan M.; and Schultz, Ward E., to Texaco Inc. Pulsed neutron logging with background compensation. 3,780,303, Cl. 250-31.000.

Smith International, Inc.: *See—*
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Smith, Peter John: *See—*
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Smith, Wayne A., to Schlitz, Jos. Brewing Company. Wear strip construction for conveyor. 3,779,368, Cl. 198-204.000.

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Smith, William Richard, to Arizona Chemical Company. Preparation of color improved tall oil rosin-pentaerythritol esters. 3,780,013, Cl. 260-97.500.

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Smokontrol Corporation of America: *See—*
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Snam Progetti S.p.A.: *See—*
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Snell, Leonard Stanley, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Fluid flow compressors. 3,779,666, Cl. 415-159.000.

Snitgen, Joseph D. Safety ignition lock. 3,779,332, Cl. 180-112.000.

Snook, Richard K., to Diginetics Incorporated. Temperature measuring systems for automotive vehicles and the like. 3,779,079, Cl. 73-346.000.

Snow, Gerald A.; and Doughy, Harold A., to United Industrial Syndicate, Inc. Egg carton. 3,779,370, Cl. 206-45.310.

Snydacker, James U.: *See—*
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Snyder, John L.; Papavasiliou, Mary J.; and Mann, Roger H., to Shell Oil Company. Process for the preparation of branched conjugated diene copolymers. 3,779,999, Cl. 260-78.0ad.

Sobel, Jay E., to Universal Oil Products Company. Isoparaffin alkylation with a lighter olefin and subsequently with a heavier olefin. 3,780,131, Cl. 260-683.450.

Societa Italiana Resine S.I.R. S.p.A.: *See—*
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Societa Italiana Resine S.p.A.: *See—*
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Societa Italiano Resine S.I.R. S.p.A.: *See—*
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Societe Anonyme de Telecommunications: *See—*
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Societe Anonyme Francaise du Ferodo: *See—*
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Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
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Societe Nationale des Poudres et Explosifs, mesne: *See—*
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Solich, Edeltraud: *See—*
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Somekh, George Solomon: *See—*
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Sommer, Herbert J., to Wooster Brush Company, The. Pump spray unit. 3,779,669, Cl. 417-214.000.

Son, Pyong-Nae, to Goodrich, B. F., Company, The. (Hydrocarbonthio) oxamide vulcanization retarders. 3,780,001, Cl. 260-79.50a.

Sonnenberg, Kent L. Appliance for treating especially thin-walled metal work pieces. 3,779,057, Cl. 72-56.000.

Sony Corporation: *See—*
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Sorensen, George C. Turbocharged piston engine having improved economizer and self ignition. 3,779,005, Cl. 60-11.000.

Soucy, Eugene H. Stud bracing for metal studs. 3,778,952, Cl. 52-667.000.

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Spahl, Edwin, to Ford Motor Company. Motor vehicle with mechanically-operable safety belt system. 3,779,578, Cl. 280-150.0sb.

Spahn, Leland R. Inflatable amusement device for treading on water. 3,779,201, Cl. 115-20.000.

Spalt, Howard A.; Chu, Chung Ying; and Niketas, Paul, to Masonite Corporation. Production of crystalline xylose. 3,780,017, Cl. 260-209.00r.

Spanoudis, Louis, to Owens-Illinois, Inc. Method of making glass lasers of increased heat dissipation capability. 3,779,732, Cl. 65-31.000.

Speakman, Eugene R., to McDonnell Douglas Corporation. Stress coining bolt. 3,779,127, Cl. 85-7.000.

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Speight, James G.: *See—*
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Stahlecker, Fritz, to Wilhelm G.m.b.H. Bearings for an open-end spinning turbine. 3,779,620, Cl. 308-203.000.

Stahlkopf, Friedrich R. R., to Tuchenhagen, Otto A. P. Pressure-regulated diaphragm pump. 3,779,384, Cl. 210-136.000.

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Deumens, Johannes J. M.; and Stijfs, Petrus A. M. J., 3,780,083.
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Stammer, John S. Hinged golf club bag. 3,779,297, Cl. 150-1.50r.

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Steltner, Hermanna R. Dynamically effective oil-guide-boom and method for purifying water employing the same. 3,779,382, Cl. 210-83.000.

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Stetson, Harold Wilbur; and Gyurk, Warren Joseph, to Western Electric Company, Incorporated. Use of menhaden oil to defiocculate dry ground alumina in manufacture of substrates. 3,780,150, Cl. 264-63.000.

Stevely, Robert Reid; and Webster, William Snodgrass, to Imperial Chemical Industries, Limited. Propellent charge comprising nitrocellulose. 3,779,820, Cl. 149-2.000.

Stevens, J. P., & Co., Inc.: *See—*
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Stevens, Kenneth, to Foster Wheeler John Brown Boilers Ltd. Arc welding torches for tube plate welding. 3,780,257, Cl. 219-125.00r.

Stevens, Richard W., to Milwaukee Boiler Manufacturing Company. Machine for sinking vertical shafts. 3,779,322, Cl. 175-162.000.

Stewart, James A., to GTE Automatic Laboratories Incorporated. Automatic disconnect circuit for reducing dial pulse distortion caused by subscriber carrier equipment. 3,780,228, Cl. 179-16.00a.

Stewart, James M., to Stewart Research, Inc. Pressure relief valve for a sphygmomanometer. 3,779,236, Cl. 128-2.05g.

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Stiles, Claude J.; and Fischer, Joseph, to National Distillers and Chemical Corporation. Free flowing wax coated particulate ethylene vinyl acetate copolymers. 3,779,785, Cl. 117-4.000.

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Stoll, Wolfgang, to ALKEM GmbH. Method for the manufacture of plutonium-containing nuclear fuel. 3,778,885, Cl. 29-527.200.

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Stout, David J.: *See—*
Kennedy, C. Trowbridge; Stout, David J.; and Dodds, Harold E., 3,779,799.

Stover, Harris A., to Collins Radio Company. Means for extending the identification range of radio equipments using repetitive coded identification signals. 3,780,279, Cl. 235-164.000.

Stoy, Artur; and Urbanova, Renata, to Ceskoslovenska akademic ved. Method of protecting glass against fogging. 3,779,792, Cl. 117-72.000.

Strabag Bau-A.G.: *See—*
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Strand, Walter L. Safety stabilizer and shock absorber system. 3,779,535, Cl. 267-64.000.
Straujups, John E.; and Bellwood, Frederick J., to Birch Brothers Inc. Apparatus for wrapping rolls of materials. 3,778,963, Cl. 53-66.000.
Strawson, Kenneth Horace, to Burnand, W. E., & Son Limited. Metal shearing machines. 3,779,120, Cl. 83-601.000.
Streel, Dominique Thomas Francois, to Cockerill-Ougree-Providence et Esperance-Longdoz en abreze "Cockerill". Process for the manufacture of a welding wire, and welding wire. 3,779,802, Cl. 117-207.000.
Streu, Robert J., to Dow Chemical Company, The. Method for expanding microspheres and expandable composition. 3,779,951, Cl. 260-2.50b.
Strohecker, John W., to United States of America, Atomic Energy Commission. Apparatus for removing oil and other floating contaminants from a moving body of water. 3,779,385, Cl. 210-154.000.
Stromin, Boris Alexandrovich; and Baranov, Boris Konstantinovich. Method for control of a brushless motor. 3,780,362, Cl. 318-254.000.
Strugar, Daniel: *See—*
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Study, Jon A., to Caro, Inc. Stamping device. 3,779,164, Cl. 101-334.000.
Stuemky, Robert E., to Gates Rubber Company, The. Centering device for flexible shaft couplings. 3,779,038, Cl. 64-11.00b.
Stumpe, Gunter. Cloth-spreading machine. 3,779,541, Cl. 270-31.000.
Sturm, Edward R., to Thomas Concrete Products Company. Apparatus for simultaneously precasting a plurality of structural members. 3,779,505, Cl. 249-84.000.
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Suggitt, Robert M., to Texaco Inc. Disproportionation of alkylbenezenes. 3,780,123, Cl. 260-672.00t.
Sugimura, Nobuyuki. Air pressure actuator. 3,779,135, Cl. 91-45.000.
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Suh, John T.; and Schnettler, Richard A. 2-Aralkylamino-4,5-dihydro-3H-1,3-benzodiazepines. 3,780,023, Cl. 260-239.0bd.
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Tabone, Donald J. Surgical sterilization method. 3,779,707, Cl. 21-58.000.
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Taher, Mohammed Amin El; Balogh, Erno; and Boltrek, Henry, to Westinghouse Electric Corporation. Transportation device having movable handrails. 3,779,360, Cl. 198-16.00r.
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Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Color electrophotographic apparatus. 3,779,639, Cl. 355-4.000.
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Tarbox, Willis; Dolan, Vincent; and Harman, Ralston L., to Hardinge Brothers, Inc. Workpiece stop for a collet. 3,779,566, Cl. 279-15.000.
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Tatem, Bemis Caldwell, Jr.; and Moehring, John Theodore, to General Electric Company. Combined variable angle stator and windmill control system. 3,779,665, Cl. 415-123.000.

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Tatum, David. Process for desulfurizing fuel. 3,779,722, Cl. 44-1.00r.

Taub, David; and Hoffsommer, Robert D., Jr., to Merck & Co., Inc. Process for preparing 5-(γ-tertiorgaminopropylidene-dibenzo [a,d] cycloheptenes. 3,780,106, Cl. 260-570.8tc.

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Taylor, James H., 1/2 to Kosar Golf Development Laboratory, Inc., The. Golf club grip and marker. 3,779,559, Cl. 273-162.00d.

Taylor, Lynn J.; and Grier, John D., to Owens-Illinois, Inc. Process for applying multiple microelectronic layers to substrate. 3,779,807, Cl. 117-215.000.

Tchiyanagi, Toshikazo, to Canon Kabushiki Kaisha. Electromagnetic shutter releasing device for a photographic camera. 3,779,633, Cl. 352-204.000.

Teach, Eugene G., to Stauffer Chemical Company. Phenoxy acetals. 3,780,104, Cl. 260-562.00r.

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Tesoro, Giuliana C., to Stevens, J. P., & Co., Inc. Polyolefin fibers with aminosilones polymerized within the fibers. 3,779,703, Cl. 8-115.500.

Tetenbaum, Marvin Theodore, to Allied Chemical Corporation. Fungicidal compositions and methods of killing fungi using alkyleniminc-2-oximes. 3,780,178, Cl. 424-244.000.

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Thomas Concrete Products Company: *See—*
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Thompson, George H. B., to International Standard Electric Corporation. Gallium arsenide lasers. 3,780,358, Cl. 317-235.00r.

Thompson, John, to Midland Silicones Limited. Silicon compounds containing lactam structures. 3,780,025, Cl. 260-239.30r.

Thompson, Leon J.; deceased (Thompson, Margaret; voluntary administrator); Kugler, Carl J., Jr.; and Latta, Garland H., to International Business Machines Corporation. Measurement method and system. 3,780,274, Cl. 235-151.031.

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Trammell, Earl M., Jr., to Cycle-Drive Corporation. Bicycle drive assembly. 3,779,099, Cl. 74-594.003.

Trankner, Werner, to VEB Pentacon Dresden Kamera- und Kinowerke. Reflex photographic cameras. 3,779,146, Cl. 95-42.000.

Trautwein, Wolfgang. Snow vehicles. 3,779,326, Cl. 180-5.00r.

Trepanier, Donald L., to Dow Chemical Company, The. 4-β-Hydroxyethyl-as-triazines. 3,780,039, Cl. 260-248.0as.

Trevelyan, William E., to Distillers Company (Yeast) Limited, The. Preparation of active dry yeast. 3,780,181, Cl. 426-18.000.

Trias, John A.: *See—*
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Tsen, Cho C.; and Hoover, William J., to Kansas State University Research Foundation. Method of increasing protein content of wheat flour based baked and fried products and compositions for preparing same. 3,780,188, Cl. 426-152.000.
Tsuchihashi, Genichi: *See—*
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Turner, Arthur A. Process of assembling fabric and plastic to form a building structure which may be inflated and chemically rigidized. 3,779,847, Cl. 156-156.000.
Turrell, Douglas Walter, to Leeds & Northrop Company. Analog-to-digital wattmeter multiplier. 3,780,273, Cl. 235-150.052.
Tussey, Jimmy D.; Oakes, George W.; Carr, Herbert F.; and Melnick, Irving, said Carr assor. to said Melnick, Irving and said Oakes and said Tussey assors. to said Oakes, George W. Contamination free surgical evacuator. 3,779,243, Cl. 128-278.000.
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Ueda, Hiroshi; and Tsujimoto, Kayoshi, to Minolta Camera Kabushiki Kaisha. Apparatus for controlling an electronic flash. 3,779,141, Cl. 95-10.0ce.
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Vancini, Carlo A., to Peabody Engineering Corporation. Gas drying apparatus. 3,778,980, Cl. 55-238.000.

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Verdier, Claude H., to Office Nationale d'Etudes et de Recherches Aerospatiales, Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale, Delegation and Ministerielle pour l'Armament, Direction des Poudres. Fuel unit for a hybrid hotgas generator. 3,779,011, Cl. 60-251.000.

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Waggener, Richard W.; and Taylor, James D., to Intermountain Research and Development Corporation. Carbonation process for the manufacture of sodium bicarbonate. 3,780,160, Cl. 423-186.000.

Wagner Electric Corporation: *See*—
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Wagner, Peter R.; and Wilson, Donald M., to International Business Machines Corporation. Method of protecting electrical conductor terminations during gas panel fabrication. 3,778,901, Cl. 29-625.000.

Wagner, William R., to Rockwell International Corporation. Non-polluting steam generator system. 3,779,212, Cl. 122-23.000.

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Cameron, James Brisbane; Walton-Knight, Bernard Piet; Bartoo, Otto Floris; and Molijn, Joannes Cornelius, 3,778,882.

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Ward, Harry M., III; and Hackbarth, Eugene R., to Outboard Marine Corporation. Rotary combustion engine having a charge-cooled rotor and side and peripheral wall intake ports. 3,779,214, Cl. 123-8.010.

Ward, John E., to Owens-Corning Fiberglas Corporation. Sizing composition and glass fibers treated therewith. 3,779,981, Cl. 260-40.00r.

Ward, Leslie Russell, to Rola Celestion Limited. Loudspeaker diaphragm. 3,780,232, Cl. 179-181.00r.

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Watson, James C.: *See*—
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Weakley, Everett A., to United States of America, Atomic Energy Commission. Method for processing scrap fissile material into a form suitable for shipping. 3,779,938, Cl. 252-301.10r.

Wean United, Inc.: *See—*
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Weber, Edwin J.: *See—*
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Wech, Robert J., to FMC Corporation. Heat sealing head. 3,779,838, Cl. 156-583.000.

Weeks, Charles Earl; and Watts, Golden Fred, to Ashland Oil, Inc. Polymerizable water-in-oil emulsions. 3,779,966, Cl. 260-29.6nr.

Weeks, Thomas Joseph, Jr.; and Reimschussel, George Paul, to Johns-Manville Corporation. Disposable face respirator. 3,779,244, Cl. 128-146.200.

Wegel, Erich: *See—*
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Wegner, Peter; Neeff, Rutger; Hederich, Volker; and Gehrke, Gunter, to Bayer Aktiengesellschaft. Exhaust dyeing of synthetic fiber materials with anthraquino2e dhestuufh 8nd 9ated-km lihcible hclo1enated alkphctic hyddoccrblns E6 008/039n000. 3,779,700, Cl. .

Weidner, Albert W.: *See—*
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Weigert, Wolfgang: *See—*
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Weinberg, Kurt; and McKeon, James E., to Union Carbide Corporation. Substituted ethylene bis (phosphine oxides). 3,780,112, Cl. 260-606.580.

Weinstock, Joseph, to Smithkline Corporation. Thiolpulvinic acid derivatives. 3,780,064, Cl. 260-343.600.

Weisgerber, Gregor: *See—*
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Weiss, Paul; Bardong, Helmut; and Frank, Wolfgang, to Su Ddeutsche Kuhlerfabrik Juluis Fr. Behr., Firma. Heating and cooling system for motor vehicles. 3,779,307, Cl. 165-42.000.

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Welsh, Jay Y., to Diamond Shamrock Corporation. Process for recovering high purity free flowing crystalline manganese dioxide from impure manganese nitrate solutions. 3,780,158, Cl. 423-49.000.

Welsh, Jay Y., to Diamond Shamrock Corporation. Process for recovering manganese values from low grade oxidized manganese containing ores. 3,780,159, Cl. 423-49.000.

Wendler, Charles F.; and Baum, Charles S., to Permanence Corporation. Heat resistant high strength composite structure of hard metal particles in a matrix, and methods of making the same. 3,779,715, Cl. 29-182.100.

Wenger, Claude, to Sodeco Societe des Compteurs de Geneve S.A. Coin magazine. 3,779,257, Cl. 133-5.00r.

Wenglar, Frank G., to FMC Corporation. Sanitary butterfly valve. 3,779,511, Cl. 251-306.000.

Werderitsch, Thomas W., to General Electric Company. Cabinet having a kick plate assembly. 3,779,624, Cl. 312-278.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
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Werner, Herbert S., to Mista-Matic Corporation. Periodical dispenser for aerosol containers. 3,779,425, Cl. 222-70.000.

Werner, Leo C.: *See—*
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Werts, Everett Wendall; and Wetter, Charles Richard, to General Electric Company. Zero crossing SCR firing circuit network. 3,780,318, Cl. 307-252.0ua.

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West, Thomas G.: *See—*
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Westergren, George A.; Koland, David G.; and Crooks, Stanley R., to Whirlpool Corporation. Vacuum cleaner implement tray. 3,778,863, Cl. 15-323.000.

Western Auto Supply Company: *See—*
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Western Electric Company, Incorporated: *See—*
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Western States Envelope Company: *See—*
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Wetter, Charles Richard: *See—*
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Wetzel, Roland; and Rambausek, Hugo, to Heidelberger Druckmaschinen Aktiengesellschaft. Foil transport arrangement in hot process embossing printing machines. 3,779,442, Cl. 226-123.000.

Whale, Paul: *See—*
Jin, Jung Il; and Whale, Paul, 3,780,141.

Wheeler, Henry H., 50% to Lansdale, William M. and 50% to Wingate, Francis E. Process for solvent extraction of ores. 3,780,167, Cl. 423-578.000.

Whirlpool Corporation: *See—*
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Nichols, Duane C., 3,779,032.
Swanson, Donald F., 3,779,033.
Westergren, George A.; Koland, David G.; and Crooks, Stanley R., 3,778,863.

White, Daniel A., to FMC Corporation. Method of forming plastic bag with integral tie. 3,779,139, Cl. 93-35.0vl.

White, Robert W. Top driven material shearing mixer and aerator. 3,779,531, Cl. 261-87.000.

White, Wilfred A. S.; and West, Edgar R., to Jute Industries Limited. Method of laying protruding fibres, and increasing abrasion resistance of textile yarns. 3,778,988, Cl. 57-12.000.

Whitlock, Inc.: *See—*
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Whitney, W. A., Corporation: *See—*
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Whittaker Corporation: *See—*
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Pansky, Emil J.; and Dean, Donald G., 3,779,610.

Whittaker, Dewey E.; and Jenks, Charles D., to Moore, Samuel, and Company. Composite hose having a grounding wire enclosed in a sleeve and wrapped about the core tube of the hose. 3,780,208, Cl. 174-47.000.

Widdig, Arno; Kuhle, Engelbert; Sasse, Klaus; Scheinpflug, Hans; Crewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Substituted ureidophenyl thioureas. 3,780,089, Cl. 260-470.000.

Wiegand, John R.: *See—*
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Wiegand, John Richard, 1/2 to Velinsky, Milton and 1/2 to Wiegand, John R. Pulse generator. 3,780,313, Cl. 307-106.000.

Wilcox, Henry O., to Denver Plastics Inc. Flexible sealing closure with frangible section. 3,779,416, Cl. 220-27.000.

Wildsmith, Eric, to Lilly Industries, Ltd. Production of erythromycylamine compounds. 3,780,019, Cl. 260-210.00e.

Wilfert, Karl, to Daimler Benz Aktiengesellschaft. Safety installation for the passengers of vehicles, especially passenger motor vehicles. 3,779,577, Cl. 280-150.0ab.

Wilhauer, Cecil Eldon: *See—*
Larios, Dennis Gary; and Wilhauer, Cecil Eldon, 3,779,515.

Wilhelm G.m.b.H.: *See—*
Stahlecker, Fritz, 3,779,620.

Wilhelm, Wilhelm, to Siemens Aktiengesellschaft. Data distribution line arrangement. 3,780,316, Cl. 307-209.000.

Williams, Mathew, Jr.: *See—*
Hoyt, John; Koch, Karl; and Williams, Mathew, Jr., 3,780,004.

Williams, Peter J.: *See—*
Entwistle, Ian D.; Williams, Peter J.; and Devlin, Barry R. J., 3,780,055.

Williamson, Stearns: *See—*
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Wilson, Donald M.: *See—*
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Wilson, James D.: *See—*
Miles, Malcolm G.; Wilson, James D.; and Cohen, Morrel H., 3,779,814.

Wilson, John H., to Telex Computer Products, Inc. Vacuum buffer. 3,779,481, Cl. 242-182.000.

Wilson, Raymond F.; and Cole, Edward L., to Texaco Inc. Treatment of heavy petroleum oils. 3,779,895, Cl. 208-86.000.

Wilson, Richard C., to Aluminum Company of America. Indicator element for ball bat. 3,779,551, Cl. 273-72.00a.

Wilson, Richard D.: *See—*
Schack, Carl J.; and Wilson, Richard D., 3,780,165.

Wilson, Warren M. Heat exchanger. 3,779,306, Cl. 161-3.900.

Wimberly, Louis. Board game apparatus. 3,779,555, Cl. 273-134.00d.

Windsor, Robert K. Device for applying materials to the area of the eye. 3,779,245, Cl. 128-233.000.

Wingate, Francis E.: *See—*
Wheeler, Henry H., 3,780,167.

Winkler, Charles L., to Westinghouse Electric Corporation. Terminal slowdown control for elevator system. 3,779,346, Cl. 187-29.00r.

Winningham, Troman, to Truman Smog Control, Inc. Sludge separator. 3,779,153, Cl. 100-116.000.

Wirth, Hans: *See—*
Wisfeld, Werner; Wirth, Hans; Lotz, Walter; and Kratz, Alfred, 3,779,909.

Wirth, Wolf-Dieter; Muller, Erwin; and Rohr, Harry, to Bayer Aktiengesellschaft. Benzazamide compounds as blowing agents. 3,779,954, Cl. 260-2.50r.

Wisfeld, Werner; Wirth, Hans; Lotz, Walter; and Kratz, Alfred, to Laboratorium fur Adsorptionstechnik GmbH. Method of and apparatus for the purification of water containing organic contaminants. 3,779,909, Cl. 210-29.000.

Witco Chemical Corporation: *See—*
Clark, John R.; and Bluestein, Claire, 3,779,975.
Polanskyj, Bohdan S.; Solomon, Jack M.; Chisholm, Daniel R.; and Bluestein, Bernard R., 3,780,107.

Withers, James G., Jr.; Habdas, Edward P.; and Jurmo, Michael W., to Universal Oil Products Company. Internally ridged heat transfer tube. 3,779,312, Cl. 165-184.000.

Witherspoon, Romeo R., to General Motors Corporation. Hydrophilic treatment for hydrophobic gas electrodes. 3,779,812, Cl. 136-120.0fc.

Witney, Clifford Edward; and Present, Charles William Stratford, to Vandervell Products Limited. Plating boxes for holding a stack of semi-cylindrical bearing liners during plating. 3,779,890, Cl. 204-297.00r.

Witte, Walter R., to Speco, Inc. Composite expansible biasing and sealing gasket. 3,779,565, Cl. 277-123.000.

Wojcikowski, Czeslaw: *See—*
Brzozowski, Zdzislaw; Angielski, Stefan; and Wojcikowski, Czeslaw, 3,780,058.

Wojtowicz, Edward A.; Hunter, James R.; and Lazzarotti, S. James, to Burroughs Corporation. Vacuum wheel document direction changing device. 3,779,546, Cl. 271-196.000.

Wolcke, Uwe: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,780,062.

Wolf, Edgar; and Lau, Edward, to Redactron Corporation. Magnetic tape transport system and associated controls. 3,779,485, Cl. 242-204.000.

Wolfarth, Eugene F.: *See—*
Farran, Charles F.; and Wolfarth, Eugene F., 3,779,756.

Wolff, Edwin K., to NJM Inc. Labeling machine. 3,779,829, Cl. 156-361.000.

Wollenburg, John G. Trailer maneuvering mechanism. 3,779,328, Cl. 180-14.00a.

Woltersdorf, Otto W., Jr.: *See—*
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 3,780,027.

Wood, Gordon G.; and McCabe, James L., to Woodco Ltd. Truss and method of making same. 3,778,946, Cl. 52-223.00r.

Wood, Harold B., Jr.: *See—*
Howell, Edward R.; Wood, Harold B., Jr.; and Sayad, Richard S., 3,779,927.

Wood, John Irving: *See—*
Waksberg, Armand; and Wood, John Irving, 3,780,296.

Wood, Louis L., to Grace, W. R., & Co. Method for preparing polyurethane from polyisocvanate and polyalkanolamine using a blocking acid salt. 3,779,994, Cl. 260-77.5aq.

Woodall, Jerry M.: *See—*
Dumke, William P.; Rideout, Vincent L.; and Woodall, Jerry M., 3,780,359.

Woodco Ltd.: *See—*
Wood, Gordon G.; and McCabe, James L., 3,778,946.

Woodle, Robert A., to Texaco Inc. Lube oil manufacture. 3,779,896, Cl. 208-86.000.

Woodman Company, Inc., The: *See—*
Henry, Nelson R.; and Middour, Donald R., 3,779,836.

Woollacott, Derrick Sunnocks, to Colorapid Limited. Apparatus processing photographic material. 3,779,147, Cl. 95-96.000.

Woolman, Myron. Classroom for paired learning. 3,778,911, Cl. 35-60.000.

Wooster Brush Company, The: *See—*
Sommer, Herbert J., 3,779,669.

Wootten, William A. Interlocking seam structure. 3,779,448, Cl. 229-48.00r.

Worner, Gunter, to Daimler-Benz Aktiengesellschaft. Blocking synchronizing arrangement for motor vehicle change-speed gears. 3,779,352, Cl. 192-53.00f.

Wrench, Richard E.; and Smith, Benjamin F., Jr., to Texaco Inc. Hydrotreating-hydrocracking process for manufacturing gasoline range hydrocarbons. 3,779,897, Cl. 208-89.000.

Wright, Bruce C.; and Erickson, Donald G., to Jacobson Manufacturing Company. Grass catcher bag and mower assembly. 3,778,986, Cl. 56-202.000.

Wright, Jack C.: *See—*
Vennard, William O.; and Wright, Jack C., 3,779,241.

Wu, Dao-Tsing: *See—*
De Marsico, Henry J.; Strugar, Daniel; and Wu, Dao-Tsing, 3,779,976.

Wu, Tao-Yuan, to Ford Motor Company. Distributor vacuum spark advance control valve with regulator. 3,779,220, Cl. 123-117.00a.

Wysocki, Joseph J.: *See—*
Saeva, Franklin D.; and Wysocki, Joseph J., 3,780,307.

Xerox Corporation: *See—*
Dryden, Vernon W., 3,780,288.
Haas, Werner E. L.; Flannery, John B., Jr.; Mechlowitz, Bela; and Adams, James E., 3,779,751.
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Cope, Wswald James; and Chaikin, Saul W., 3,779,768.

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Stefanucci, Arthur; and Yadlowsky, Slawko, 3,780,197.

Yakubek, Louis P., to Owens-Illinois, Inc. Articulated conveyor structure. 3,779,365, Cl. 198-131.000.

Yakuboff, Paul D.: *See—*
Benson, Gustav E.; and Yakuboff, Paul D., 3,779,207.

Yale, Harry L., to Squibb, E. R., & Sons, Inc. 1-[3-[5,11-dihydrodibenz[b,e][1,4]oxazepin-5-yl] propyl]-phenyliperidinols. 3,780,044, Cl. 260-293.580.

Yale, Harry L.; and Bernstein, Jack, to Squibb, E. R., & Sons, Inc. Dibenzooxazepines and dibenzothiazepines. 3,780,059, Cl. 260-326.00d.

Yamada, Kiichi. Device for removing noxious substances discharged from chimneys. 3,779,709, Cl. 23-260.000.

Yamada, Seiji: *See—*
Yata, Kotaro; Nanba, Yasuhiro; and Yamada, Seiji, 3,779,142.

Yamada, Setsuo: *See—*
Kitamura, Kazuo; Takabayashi, Fumiki; and Yamada, Setsuo, 3,779,705.

Yamaga, Minoru: *See—*
Kanetsuki, Koji; Yamaga, Minoru; and Ogawa, Hiromichi, 3,779,810.

Yamamoto, Takenori: *See—*
Hori, Akoto; and Yamamoto, Takenori, 3,778,844.

Yamamoto, Yasumichi; and Rokujo, Kazuo, to Nippon Sheet Glass Co., Ltd. Apparatus for cutting the edges of sheet glass. 3,779,437, Cl. 225-96.500.

Yamamura, Yoshinobu, to Kenki Insatsu Kabushiki Kaisha. Method and apparatus for automatically setting up of paper cases with the bendable-headed inner case. 3,779,140, Cl. 93-36.100.

Yamasa Shoyu Kabushiki Kaisha: *See—*
Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,779,867.

Yamashita, Shohachiro: *See—*
Shibano, Yoshizo; and Yamashita, Shohachiro, 3,780,374.

Yancey, John W.: *See—*
Kennicutt, Robert B.; Sitton, Ellis A.; and Yancey, John W., 3,779,615.

Yao, Ying L.: *See—*
Lin, Yeong S.; and Yao, Ying L., 3,780,312.

Yata, Kotaro; Nanba, Yasuhiro; and Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Automatic electronic flash device. 3,779,142, Cl. 95-10.0ce.

Yellini, Haim; Konfino, Eliezer; and Gan, Ramat, to Assia Chemical Laboratories Ltd. Process for the preparation of 4-chloro-N-furfuryl-5-sulfamoyl anthranilic acid. 3,780,067, Cl. 260-347.002.

Yeo, Herbert G., to Augat, Inc. Pin straightening machine. 3,779,291, Cl. 140-147.000.

Yevick, George J.; and Waly, Adnan, to Personal Communication Inc. Microfiche reading attachment for a typewriter. 3,779,635, Cl. 353-27.000.

Yokata, Tuneo, to Funai Electric Co., Ltd. Selective tape recorder for endless tape cartridges. 3,779,560, Cl. 274-4.00f.

Yokoyama, Takesi: *See—*
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,524.
Tanigawa, Shogo; Yokoyama, Takesi; and Karakawa, Kouichi, 3,779,525.
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Yonezawa, Teruhiko: *See—*
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Yoshino, Hiroshi: *See—*
Katoh, Yoshiki; Kuninaka, Akira; and Yoshino, Hiroshi, 3,779,867.

Yoshitomi Pharmaceutical Ind., Ltd.: *See—*
Nakanishi, Michio; Oe, Takanori; and Seki, Toshio, 3,780,035.

Young, David A.; and Brannock, Kent C., said Young assor. of 1/2 Eastman Kodak Company. Reduction of triphenylphosphine oxide with iron to triphenylphosphine. 3,780,111, Cl. 260-606.50p.

Young, Frank G.; and Pennington, Leroy R., to Union Carbide Corporation. Catalytic process for dehydration of alcohols. 3,780,127, Cl. 260-682.000.

Young, Fu-Dah, to American Cyanamid Company. Predominantly aqueous substituted triamcinolone compositions. 3,780,176, Cl. 424-239.000.

Young, Robert R., to Kaiser Industries Corporation. Container storage and handling apparatus. 3,779,403, Cl. 214-16.40a.

Youngblood, Douglas J., to Texaco Inc. Catalytic cracking of hydrocarbons with zeolite catalysts. 3,779,898, Cl. 208-120.000.

Yumino, Hiroshi: *See*—
Fujisawa, Fumio; Takenoshita, Mitsuaki; Nakamura, Ichiro; and Yumino, Hiroshi, 3,779,017.

Zagoroff, Dimiter S. Heat gun. 3,779,694, Cl. 431-347.000.

Zahn, Wolfgang; Zangenfeind, Helmut; and Nagel, Erich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for splicing exposed photographic films and for encoding information on spliced-together films and associated envelopes. 3,779,837, Cl. 156-505.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; and Takeuchi, Tomio, 3,780,069.

Zampetti, Patrick L.: *See*—
McGeary, Frank L.; and Zampetti, Patrick L., 3,779,660.

Zangenfeind, Helmut: *See*—
Zahn, Wolfgang; Zangenfeind, Helmut; and Nagel, Erich, 3,779,837.

Zaugg, Roland, to Schild, A., S.A. Watch movement with off-center wheel and pinion. 3,779,002, Cl. 58-59.000.

Zaverchand & Company: *See*—
Sahgal, Prakash Nath, 3,780,116.

Zavertnik, Marshall G.: *See*—
Kaesser, Glenda F.; and Zavertnik, Marshall G., 3,779,078.

Zawoiski, Peter K.: *See*—
Freudenthal, Hugo D.; Townsend, Richard E.; Zawoiski, Peter K.; and Schatz, Edward, 3,779,911.

Zeitzschel, Gunter: *See*—
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Zenith Carburetter Company Limited, The: *See*—
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Zenith Radio Corporation: *See*—
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Rennick, John L., 3,780,218.

Zibell, Jules Scott. Automobile storage bracket. 3,779,501, Cl. 248-302.000.

Ziebold, Paul G.: *See*—
Kirby, James D.; Hetzel, Douglas R.; McKay, Richard H.; Snydacker, James U.; and Ziebold, Paul G., 3,779,453.

Zielinski, Erich, to Rheinmetall GmbH. Hydraulic buffers. 3,779,396, Cl. 213-43.000.

Zienty, Mitchell Frank, to Miles Laboratories, Inc. Enzyme stabilization. 3,779,869, Cl. 195-68.000.

Ziers, David F., to OB/Masco Drapery Hardware Company. Molding apparatus for sheet material. 3,779,539, Cl. 269-91.000.

Zink, John, Company: *See*—
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.

Zink, John Smith: *See*—
Reed, Robert D.; Zink, John Smith; Schwartz, Robert E.; Glomm, Horst; Corble, John C.; and Koons, Harold F., 3,779,689.

Zschunke, Heinz: *See*—
Ploch, Siegfried; Scholtis, Walter; Zschunke, Heinz; and Scharch, Dieter, 3,779,852.

Zweigle, Maurice L., to Dow Chemical Company, The. Removal of monomer from acrylamide polymers with sulfur dioxide. 3,780,006, Cl. 260-89.70r.

Zygiel, Alfred E. Method and apparatus for mixing fluids. 3,779,261, Cl. 137-3.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF DECEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allumanna Svenska Elektriska Aktiebolaget: *See*—
Virsberg, Lars-Goran, Re. 27,846.

Ballini, Giuliano, and C. Bujtar, to Montecatini Edison S.p.A. Process for preparing peroxyacetals and peroxyketals. Re. 27,843, 12–18–73, Cl. 260—610.

Bujtar, Carlo.: *See*—
Ballini, Giuliano, and Bujtar. Re. 27,843.

Campbell, Jack M.: *See*—
Niven, William W. Jr. Re. 27,841.

Esso Research and Engineering Co.: *See*—
Gilbert, John B., and Kartzmark. Re. 27,845.

Fast Load Control, Inc.: *See*—
Park, Robert H. Re. 27,842.

Folger Coffee Co., The: *See*—
Niven, William W., Jr. Re. 27,841.

Gilbert, John B., and R. Kartzmark, to Esso Research and Engineering Co. Preparation of white oils with organo-aluminum activated iron group metal catalysts. Re. 27,845, 12–18–73, Cl. 208—89.

Jankelson, Bernard. Method of producing a muscularly balanced closure of the human mandible. Re. 27,847, 12–18–73, Cl. 32—21.

Kartzmark, Robert: *See*—
Gilbert, John B., and Kartzmark. Re. 27,845.

Mitchell, John E., Co.: *See*—
Olson, John W., Jr. Re. 27,844.

Montecatini Edison S.p.A.: *See*—
Ballini, Giuliano, and Bujtar. Re. 27,843.

Niven, William W., Jr., deceased, by Jack M. Campbell, administrator, to The Folger Coffee Co. Method of processing coffee. Re. 27,841, 12–18–73, Cl. 99—71.

Olson, John W., Jr., to John E. Mitchell, Co. Compressor unit with self-contained drive means. Re. 27,844, 12–18–73, Cl. 417—269.

Park, Robert H., to Fast Load Control, Inc. Methods of improving the stability of interconnected power systems. Re. 27,842, 12–18–73, Cl. 307—52.

Virsberg, Lars-Goran, by Alumanna Svenska Elektriska Aktiebolaget, assignee. Means in electric insulators for keeping the upper side of the insulator plate free from deposits reducing the flash-over strength. Re. 27,846, 12–18–73, Cl. 174—139.

LIST OF DESIGN PATENTEES

Ahrens, Paul W., to Miracle Equipment Co. Child's swing seat. 229,590, 12–18–73, Cl. D6—11.

Aladdin Industries, Inc.: *See*—
Bridges, John A. 229,601.

Alter, Hobart L., to Coast Catamaran Corp. Sailboat hull. 229,611, 12–18–73, Cl. D12—70.

Amerock Corp.: *See*—
Tegner, Raymond U. H. 229,605.

American Optical Corp.: *See*—
Shindler, Anthony. 229,633.

Bartron, Robert S., to Robert R. Shaefer. Golf club head. 229,622, 12–18–73, Cl. D34—5.

Bermender, Harold W., Jr. Electronic data printer. 229,634, 12–18–73, Cl. D64—11.

Bixler, Kenneth D.: *See*—
Reifers, Richard F., and Bixler. 229,608.

Bridges, John A., to Aladdin Industries, Inc. Disposable meal serving unit. 229,601, 12–18–73, Cl. D7—38.

Buchtel, Dean H., 22½%, to Robert C. Dye, Frank L. Buchtel, Harold H. Kehoe, and 10% to Edwin W. Oldham. Bottle. 229,606, 12–18–73, Cl. D9—60.

Buchtel, Frank L: *See*—
Buchtel, Dean H. 229,606.

Casey, James P., and J. W. Fine, Jr., to Ethyle Development Corp. Bottle or similar article. 229,607, 12–18–73, Cl. D9—167.

Chadima, George E., Jr. Combined data entry and distribution terminal. 229,615, 12–18–73, Cl. D26—5.

Coast Catamaran Corp.: *See*—
Alter, Hobart L. 229,611.

Comprehensive Health Testing Laboratories, Inc.: *See*—
Pun, John Y. 229,637.

Conaqua, Inc.: *See*—
King, Radford G., and Holler. 229,614.

Davis, Delles T., and B. D. Motlong, to Research Fuels, Inc. Vehicle. 229,613, 12–18–73, Cl. D14—3.

Defores, Eugene, to Societe Le Foyer. Casing for a pen or the like. 229,636, 12–18–73, Cl. D74—17.

Devore, R. A.: *See*—
Thomas, Robert W., and Devore. 229,625.

Devore, William and R. A.: *See*—
Thomas, Robert W., Devore, and R. A. 229,625.

Diamond International Corp.: *See*—
Reifers, Richard F., and Bixler. 229,608.

DuBois, Ralph L. Garment hanger. 229,600, 12–18–73, Cl. D6—248.

Dye, Robert C.: *See*—
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Eckel, Alan F., to Sears, Roebuck and Co. Combined can opener and knife sharpener. 229,602, 12–18–73, Cl. D8—35.

Eckel, Alan F., to Sears, Roebuck and Co. Can opener. 229,603, 12–18–73, Cl. D8—36.

Ethyle Development Corp.: *See*—
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Fine, John W., Jr.: *See*—
Casey, James P., and Fine. 229,607.

Fisher, Morris F., to Jackson Chair Co., Inc. Sofa. 229,592, 12–18–73, Cl. D6—62.

Fisher, Morris F., to Jackson Chair Co., Inc. Sofa. 229,593, 12–18–73, Cl. D6—63.

Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 229,594, 12–18–73, Cl. D6—68.

Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 229,595, 12–18–73, Cl. D6—71.

Fisher, Morris F., to Jackson Chair Co., Inc. Chair. 229,596, 12–18–73, Cl. D6—73.

Fontana, Frank: *See*—
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German, Ronald L. Motorcycle auxiliary tank. 229,612, 12–18–73, Cl. D12—155.

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Grams, Johanna, to Porzellan-Handels-GmbH. Plate or similar article. 229,626, 12–18–73, Cl. D44—15.

Gregor, Eduard, to Union Carbide Corp. Holographic laser housing. 229,617, 12–8–73, Cl. D26—14.

Gregorutti, Walter. Combined table and tray. 229,589, 12–18–73, Cl. D6—4.

Haggerty, Patrick E., Jr. Face shield for a helmet. 229,587, 12–18–73, Cl. D2—233.

Holler, Frank A.: *See*—
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Jackson Chair Co., Inc.: *See*—
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Fisher, Morris F. 229,593.
Fisher, Morris F. 229,594.
Fisher, Morris F. 229,595.
Fisher, Morris F. 229,596.

Jackson, Ira J., and L. D. Williams, to Trans-World Compacters, Inc. Trash and waste compactor. 229,632, 12–18–73, Cl. D55—1.

Jagemann, Timothy W. Clock. 229,624, 12–18–73, Cl. D42—7.

Kawaguchi, Harold H., to Physio-Control Corp. Portable combined heartbreak-monitor and defibrillator unit. 229,638, 12–18–73, Cl. D83—1.

Kehoe, Harold H.: *See*—
Buchtel, Dean H. 229,606.

King, Radford G., and F. A. Holler, to Conaqua, Inc. Water softener housing. 229,614, 12–18–73, Cl. D23—3.

Kohmer Bros., Inc.: *See*—
Stubbmann, Albert. 229,623.

LaPointe, Gabriel M., to Parker Mfg. Co. Rivet gun. 229,604, 12–18–73, Cl. D8—68.

Lussier, Carol A. Necktie. 229,588, 12–18–73, Cl. D2—351.

Matsushita Electric Industrial Co., Ltd.: *See*—
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Miracle Equipment Co.: *See*—
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Morris, Stephen W. Desk lamp. 229,627, 12–18–73, Cl. D48—20.

Morse Electro Products Corp.: *See*—
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Motlong, Bruce D.: *See*—
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Nakamura, Yasunobu: *See*—
Teruachi, Makoto, Nakamura, Sugihara, Sumino, Ueda, and Suzuki. 229,618.

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Pun, John Y., to Comprehensive Health Testing Laboratories, Inc. Spirometer. 229,637, 12–18–73, Cl. D83—1.
Reifers, Richard F., and K. D. Bixler, to Diamond International Corp. Molded packaging tray for meat or the like. 229,608, 12–18–73, Cl. D9—219.
Research Fuels, Inc.: *See*—
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Robertson, Jesse C. Signboard panel. 229,641, 12–18–73, Cl. D96—12.
Robson, Arthur, to Morse Electro Products Corp. Stereo system housing. 229,616, 12–18–73, Cl. D26—14.
Sears, Roebuck and Co.: *See*—
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Eckel, Alan F. 229,603.
Shaefer, Robert R.: *See*—
Bartron, Robert S. 229,622.
Shindler, Anthony, to American Optical Corp. Pair of spectacles. 229,633, 12–18–73, Cl. D57—1.
Shinjo, Katsumi. Clinch nut. 229,610, 12–18–73, Cl. D8—273.
Sleith, Robert W., to Suburban Plastics, Inc. Handle for a grooming aid for pets. 229,619, 12–18–73, Cl. D30—40.
Sleith, Robert W., to Suburban Plastics, Inc. Handle for a pet grooming comb. 229,620, 12–18–73, Cl. D30—40.
Sleith, Robert W., to Suburban Plastics, Inc. Handle for a pet grooming comb. 229,621, 12–18–73, Cl. D30—40.
Smith, Russell S. Shingling bracket. 229,631, 12–18–73, Cl. D54—1.
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Ueda, Kazuhiro: *See*—
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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
3R 3,778,844
68 3,778,846
146 3,778,847
236 3,778,845

CLASS 4
173 3,778,848
227 3,778,850
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CLASS 5
347 3,778,851
348WB 3,778,852
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CLASS 8
39 3,779,700
3,779,701
52 3,779,702
115.5 3,779,703
149 3,779,704
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CLASS 9
8P 3,778,854
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CLASS 12
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CLASS 13
23 3,780,200
31 3,780,201

CLASS 15
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104.3R 3,778,859
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306A 3,778,862
323 3,778,863
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340 3,778,865

CLASS 16
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CLASS 17
11 3,778,867

CLASS 21
54R 3,779,706
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CLASS 23
230B 3,779,708
260 3,779,709
288E 3,779,712
288F 3,779,710
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CLASS 24
115R 3,778,868
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204R 3,778,870
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CLASS 28
1.6 3,778,872
72.3 3,778,873

CLASS 29
157.3R 3,778,874
160.6 3,778,875
163.5F 3,778,876
173 3,778,877
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182.5 3,779,713
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182.8 3,779,716
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235.5 3,779,718
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22 3,778,903
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CLASS 33
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174P 3,778,906

CLASS 34
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116 3,778,908
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CLASS 35
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CLASS 38
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CLASS 40
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CLASS 43
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44.8 3,778,921
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69 3,778,923
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CLASS 44
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233 3,778,927

CLASS 47
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298 3,779,727
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223R 3,778,946
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23R 3,778,999
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59 3,779,002

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78.1 3,779,003
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CLASS 60
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217 3,779,009
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31 3,779,022
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512 3,779,036

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432PS 3,779,070
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155R 3,779,154
207 3,779,155
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161UZ 3,779,799
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CLASS 152
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309 3,779,851
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361 3,779,829
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68.5 3,780,211
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CLASS 204
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5 : 3,779,377
6 : 3,778,849
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